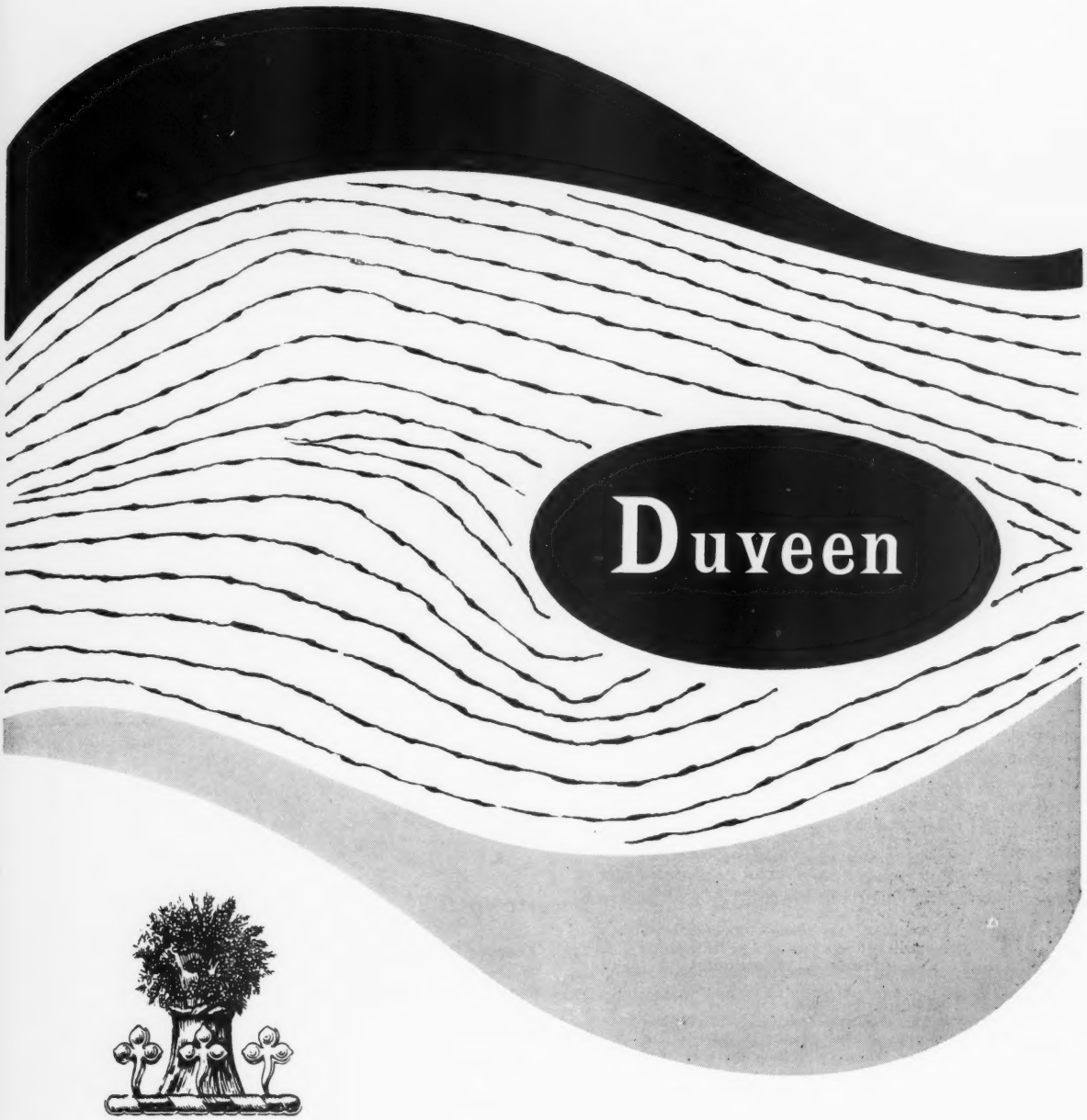

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Drug and Cosmetic Industry

Contents June 1957 Vol. 80 No. 6

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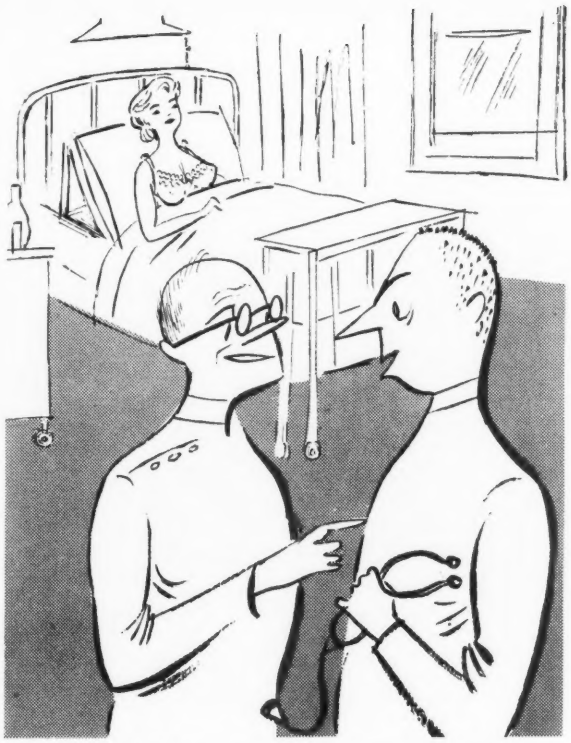

"I think she has somniferous coronary fluid"

Keeping Posted

New Searle Products

Concerning the introduction of a new synthetic abstergent under the name of Zanchol for the treatment of gall bladder, John G. Searle, president of G. D. Searle & Co., recently told stockholders of the company that it seems to be a superior product over any on the market, and although it might not be a large volume item, it should have considerable utility to the medical profession.

Later in the year, the Searle Company hopes to introduce a powerful tranquilizer of the type that will be especially useful in severe mental disorders, he said. With regard to another new item the company hopes to introduce for a variety of menstrual disorders, Mr. Searle said that there has been speculation that this drug may have a use in the field of physiological birth control. In the company's initial marketing, according to Mr. Searle, the product will only be recommended for those things in which effectiveness has been proven, and that is a variety of menstrual disorders. The product will be strictly a prescription product and therefore will only be used as individual physicians direct.

However, Mr. Searle said that it is perfectly true that the Searle company is carrying on extensive investigations as to the effectiveness of this product in fertility control. It is also correct, he said, to say that in studies to date it seems to avert conception, but at the best, these studies only have been going on for a year or so and although right now the product does not seem to have any deleterious effects no one can now tell what effects will result from the continued use of the drug over a long period of time.

"We must know," he said, "whether or not continual use does any damage temporarily or permanently. Time only will answer this question. We must proceed most cautiously. We know that the drug is efficacious in the conditions for which we are going to recommend it and this alone is a satisfactory market. I want to emphasize again that these conditions are not subject to self-diagnosis and as a consequence, the product will be under the complete control of the individual doctor of the individual patient."

Mr. Searle said that the company is readying for introduction two new forms of Nilevar, the Searle anabolic tissue and muscle building drug introduced over a year ago. One new form will be an injectable for the patient who cannot take the medicine orally, and the other will be a pediatric or children's dose put up in drops so that the medicament can be incorporated in the feeding.

Commenting on the company's current assets of $18,563,000 against current liabilities of only $2,308,000, Mr. Searle said that in addition to providing for additional facilities, a fruitful use will be for an expansion in research as an investment for the future. "We are attempting to expand our research program," said Mr. Searle, "and are considering financing outside research which might in the future create new products for us.

"We have had many opportunities to buy or invest in other companies but to date have not seen anything that would seem to fit into the Searle picture. Our minds are not closed to this possibility, though, and to have cash available for any opportunity is a comfort."

Cosmetics and Research

As cosmetics become items of necessity, more and better research into the fundamental properties of the skin also becomes a necessity, according to Dr. Arnold J. Lehman, of the Food and Drug Administration, in a guest editorial in the Journal of the American Medical Association (May 25). Carefully controlled research into the fundamental principles of skin properties and mechanisms and the action of various chemicals and drugs on the skin has "not kept pace" with the many new products and the claims made on their behalf, he said. Certain unobjectionable claims have been advanced for the effectiveness of certain preparations for reducing skin dryness and hiding skin blemishes and wrinkles. However, in recent years the trend to advertise such products as being more than just cosmetics—that they serve as "skin foods, rejuvenators or tonics," "contour creams" for bust devel-

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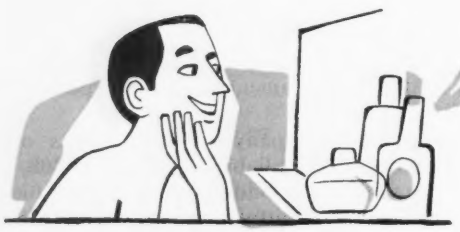

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opment or bust reducing, wrinkle eradicators, and "deep pore" cleansers.

"To date, however, no conclusive evidence has been offered in support of many of these claims," he said. "For example, there is nothing known to science that will restore color to hair or cure early male baldness."

Along with this recent trend, according to Dr. Lehman, a number of biologically active substances, such as vitamins and hormones, have been incorporated into cosmetic preparations, claims for which "subtly hint" at their therapeutic value without actually saying so. For instance, vitamin A supposedly enhances the appearance of the skin, while actually there is no well-substantiated scientific account to support the contention that cosmetics containing vitamin A are of greater value than those lacking it.

The actual value of vitamins, hormones, and other chemicals in cosmetics is not the only question and problem, said Dr. Lehman. There is also a question of safety—what potential harm may follow the indiscriminate inclusion of similarly potent chemicals in cosmetics.

Oral Diabetes Product Released

What appears to be a long step forward in the control of diabetes has occurred in the release on the market of Orinase, the first product for the oral treatment of diabetes to appear on the market in this country. This product of The Upjohn Company, known chemically as a sulfonylurea—a distant cousin of the sulfa drugs—has been under intense and prolonged clinical study and trial in this country since November, 1955. Approximately 18,000 of the nation's estimated 1,600,000 diabetics have been given the drug during this period with no serious adverse side effects. Approximately 1,000 of these have been taking Orinase daily for periods of a year and longer. Investigators are agreed that the drug is effective in controlling blood sugar levels in mild to moderate cases, particularly in those 40 years of age or older who require 40 units of insulin or less.

The drug must be used under the direction of a physician and for this reason is restricted to distribution by prescription only. It is not indicated and should not be used in juvenile diabetics, in those prone to acidosis, or those who have the unstable form of the disease of suffer from other complications..

The generic name of Orinase is tolbutamide. It was discovered in Germany in the laboratories of Farbwerke Hoechst in 1954 and has been available in some areas in Europe since September, 1956, and in Canada since April, 1957.

Authorities estimate that there are some 1,600,000 diabetics in the United States; an estimated 55,000 new cases are found each year. The great majority of diabetics, some believe as high as 70 to 75 per cent, are in the 40 and over age group.

The fact that the product is restricted to distribution on prescriptions makes it necessary for diabetics using it to continually get prescriptions from their physicians. This is not the case with insulin for which a prescription is not necessary. However, users of insulin need prescriptions to obtain hypodermic needles and syringes. However, these purchases are much less frequent than the purchases of insulin. Of course, the Orinase problem can be solved by prescriptions for large amounts of the drug.

Bristol-Myers, Macy Agreement

Following the granting of a preliminary injunction to Bristol-Myers Company restraining R. H. Macy & Co. in infringement of the trademark Bufferin, Bristol-Myers and Macy settled the suit by an agreement in which Macy recognizes the validity of the trademark Bufferin and agrees that in the future:

1. Macy will not falsely represent that any product is Bufferin, contains Bufferin, is the same thing as Bufferin, is made according to the same formula as Bufferin, contains the same ingredients as Bufferin, or is made by the maker of Bufferin.
2. Macy will not use or refer to the name Bufferin as a common descriptive or generic term for a product or a type or class of products.
3. Macy will not substitute any product for Bufferin when a customer requests Bufferin, without expressly calling attention to such substitution.
4. Macy will not employ the name Bufferin other than as a trademark identifying Bristol-Myers' product Bufferin and in advertising or selling Bristol-Myers' Bufferin; but Macy is permitted to use the name "buffered aspirin" on its product and to describe truthfully the relative effects and the comparative prices of Bufferin and other products by oral statements to customers or by store displays containing packages of Bufferin.

The aggreement provides that if Macy should substantially violate any of these agreements, a permanent injunction containing all such agreements will be entered by the Court in the suit which will remain pending. In light of Macy's recognition of Bristol-Myers' rights, Bristol-Myers has waived damages in the suit.

Merck Patents in France

A French court held last month that SIFA (Societe Industrielle pour la Fabrication des Antibiotiques) of Paris infringes five Merck French process patents relating to vitamin B_{12}. According to the court decree, SIFA must render an accounting and pay damages to Merck. In addition, all vitamin B_{12} products presently manufactured by SIFA are to be confiscated or their value paid to Merck.

Soaps And Detergents Up

Soap and detergent sales for the first three months of 1957 totaled 1,032,550,000 pounds, 2.6 per cent above the first quarter of 1956. In dollar value, sales for the first quarter of the current year were 9.9 per cent over the same period of 1956. Soap sales, solids and liquids, reversing a downward trend for the first time since 1951, amounted to 315,076,000 pounds, up 1 per cent from first quarter of 1956. Dollar value of these sales were $82,041,000, 11 per cent over the first quarter of 1956. Total synthetic detergent sales, solids and liquids, totaled 717,474,000 pounds, valued at

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$165,644,000. This is a tonnage increase of 3.4 per cent and a value increase of 9.6 per cent over the first quarter of 1956. Liquid synthetic detergents, which have shown tremendous increase over the past two years, continue to grow in popularity. Sales for the first quarter of 1957 totaled 75,992,000 pounds, up 18.7 per cent from the first quarter of 1956. Synthetic detergent sales for the first quarter of 1957 constituted 69.5 per cent of the total market.

SKF Changes Foreign Names

Smith, Kline & French Laboratories has changed the names of its subsidiaries in five countries. A. J. White Ltd., the British pharmaceutical firm purchased in 1956, is now operating under the name of Smith, Kline & French Laboratories Ltd. For over 30 years, SKF marketed its products in Britain through Menley & James Ltd., a subsidiary of A. J. White. Affected by this action are subsidiaries in four other countries where SKF activities were associated with A. J. White or Menley & James. In Australia, the new name is Smith Kline & French Laboratories (Australia) Ltd.; in South Africa, the new name is SKF Laboratories (Proprietary) Ltd.; in Pakistan, Pharmaco Ltd.; and in Belgium, Laboratories Smith Kline & French S. A. The main reason for the name change in Britain is to avoid confusion over having a company with one name produce or market preparations associated with another name.

Fair Trade and Trademarks

The American Fair Trade Council is attempting to strengthen fair trade by a proposed "Antimonopoly Amendment to the Lanham Trademark Act." Going back to the U. S. Supreme Court decision in the Old Dearborn case, in which the statement was made that "Courts afford redress or relief upon the ground that a party has a valuable interest in the goodwill of his trade or business, and in the trademarks adopted to maintain or extend it," it is proposed to use a trademark remedy to enforce fair trade. The association says:

"A reseller may abuse a trademark in many ways. However, if he abuses the trade (1) by advertising or selling the trademarked product at a price ther othan that established by the owner of the mark, or (2) by using the trademark for 'baiting' or 'switching' purposes, or (3) by misrepresenting the trademarked product to prospective purchasers, the reseller's privilege to use the trademark can be cut off. This in essence, is the Antimonopoly Amendment.

"Once this measure becomes law, there will be no reason to bother contracts, nonsigner clauses, state court proceedings. There will be one federal law applicable throughout the nation which will be direct, simple and inexpensive to enforce. If anybody abuses a trademark, his privilege to abuse the trademark in the future is withdrawn—quickly, easily, and finally.

"Every discounter knows that without the use of valuable trademarks, his business is doomed. Manufacturers who wish to protect their products from unwanted exploitation at the hands of discounters at last have their answer—a weapon which will protect their valuable trademarks. . .

"The consumer, too often the victim of predatory pricing practices, 'baiting 'and 'switching' tactics, and misrepresentation, will gain much broader protection under the proposed amendment than is now available to him under fair trade."

While the American Fair Trade Council would attempt to bring about enforcement of fair trade by making the trademark carry the burden, other groups do not concur in this line of reasoning. This is because they feel that trademarks are vulnerable enough without adding the load of fair trade enforcement. While the patent system is always under attack from various quarters, trademarks are likewise under attack by those who charge that they tend to create monopolies. It is felt by many deeply interested in the welfare of trademarks, that any attempt to couple the trademark with the enforcement of fair trade would lend strength to the argument that trademarks tend to create monopolies. It was this line of reasoning that caused the Bureau of Education on Fair Trade rather to base its appeal for new fair trade legislation on protection of small business, rather than try to couple it with trademarks.

More Dentists

There are 99,227 dentists in the United States, an increase of 1,698 in a year, according to the American Dental Association. Civilian dentists number 91,986, and those serving in the armed forces, the Public Health Service, and the Veterans Administration number 7,241. Despite the increase in dentists, the ratio of dentists to population decreased to one dentist for every 1,671 persons, against one dentist to 1,667 persons a year ago, and one to 1,669 persons two years ago.

There is a continuing trend toward a more uniform distribution of dentists throughout the country. Generally the east and west coasts continue to be served by more dentists in proportion to population than any other part of the country. The regional leader continues to be the area including the District of Columbia, Maryland, New Jersey, New York, Pennsylvania, and West Virginia, with one dentist for each 1,410 persons. New England is again in second place with one dentist for each 1,498 persons.

In the Far West, including California, Nevada, Oregon, and Washington, there is a ratio of one dentist to 1,504 persons. For the Central states, the ration of one to 1,701 persons; for the Northwest states, 1829; the Southwest, 2,944; and the Southwest, 2,990.

The District of Columbia is the individual leader with one dentist for every 1,127 persons; New York State is second with one for each 1,138 persons; Minnesota is third with a ratio of one to 1,364, and Oregon is fourth with one for each 1,365.

At the other extreme are South Carolina with one dentist for every 4,767 persons, and Mississippi, where there is one dentist for each 3,718 persons.

Pharmaceutical Forecast

Forecasting a domestic pharmaceutical sales gain of 50 per cent by 1962, C. A. Setterstrom of Chas. Pfizer & Co., says that while a large part of the increase will effect all classes of products as the result of new population demands, 25 per cent of the growth

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—an imposing $675 million—will result from new product develpment. "There will be another series of product eruptions similar to those from 1947 to 1957 when there was a growth averaging about 15 per cent per year in ethical drugs," he said.

Mr. Setterstrom based his forecasts on the present research expenditures of individual, private, and governmental agencies, as well as on expected major research breakthroughs. One such area pinpointed by Mr. Setterstrom for the breakthrough is in the chemistry of the brain which he said "was surrounded by an iron curtain of mystery and awe until recently. There are now indications that schizophrenia, acute depression, compulsive alcoholism, and other so-called mental diseases are organic in nature and that they can be treated with chemical compounds."

Other areas outlined by Mr. Setterstrom for drug development included hypertensives, "merely beginnings of more effective treatment for coronary disease;" artherosclerosis, "which may be dietary in origin, leading to a whole line of new products;" and geriatrics. He pointed out that "as the acute diseases are controlled, the chronic diseases will become more important. Today the chronic patients comprise only 10 to 15 per cent of the average general practitioner's practice. By 1962, these percentages may double."

Mail Order and Fair Trade

Fair Trade in New York received a blow last month when General Electric lost an attempt in the U. S. Court of Appeals for the Second Circuit to have sustained a decision of the Federal District Court preventing Masters Mail Order Company of Washington, D. C. from disregarding fair-trade minimum prices on goods sold through the mails to purchasers in New York. Naturally, G. E. intends to appeal to the U. S. Supreme Court, but meanwhile Masters is going right ahead to push sales by mail from Washington to New York buyers at cut prices.

For some time, clerks in Masters New York store have been handing out circulars stating that G. E. appliances could be bought by mail at cut prices from Masters in Washington, but now full-page advertisements are to appear in New York newspapers advertising this fact.

FTC Antibiotic Questionnaires

New questionnaires, returnable no later than July 1, have been sent by the Federal Trade Commission to eighteen antibiotic manufacturers seeking detailed information on sales and costs of antibiotics for the 1950-1956 period. The new questionnaire asks for statements on principal development expenses for the seven-year period, as well as data on investment and plant equipment, national defense construction, purchases of antibiotics for resale, and classification of employees engaged in antibiotic work. Also requested is information on bulk sales and dosage forms for 1956, pricing policies for antibiotics during that year, and descriptive statements covering the history of the development period of 1943 through 1949.

This FTC study was started in July, 1956. Meetings between FTC economists and the manufacturers to discuss accounting problems have been held at intervals since last November, both in Washington and in cities convenient to the manufacturers. Later, as tentative questionnaire drafts were completed, they were discussed with, and reviewed by members of the industry. At the same time, FTC economists were visiting the companies' plants to observe production and research processes of antibiotics in order better to evaluate data to be submitted.

Lever to Market "all"

Lever Brothers Company has obtained the trademark and the franchise to market the synthetic detergent "all", manufactured and formerly marketed by Monsanto Chemical Company. Lever, who has also taken over Fluffy "all" and Dishwasher "all", has not been marketing a controlled-suds powered detergent for automatic washing machines. In the change of marketing operations for these products—which will continue to be manufactured by Monsanto—the personnel of Monsanto's Consumer Products Division has been invited to become associated with the Lever organization.

Pharma-Craft Sales Rise

Sales of Pharma-Craft Company are now running at about three times the 1955 rate, according to company president Frank F. Bell. The sales rise is attributed "Chiefly to our ceaseless program of product development which has, among other things, brought about a new concept in cold medication, exemplified by Coldine Liquid Cold Remedy. This year alone, we have brought out four new products." Three of the new products—Fresh Ready Roll-On Lotion Deodorant, Coldene Tablets, and Coldene Nasal Spray—were introduced earlier this Spring. The fourth product, just unveiled, is Mr. Fresh, a spray antiperspirant-deodorant for "active men."

"In 1955, we not only carried a smaller line," said Mr. Bell, "but we had no sales force of our own. Today we have a smoothly functioning force of thirty-three men, and our sales prospects are such that this force will soon be enlarged. In addition, we are embarking upon a great expansion in our advertising. While continuing our schedules in mass printed media and on radio, we are also undertaking a $4 million television campaign."

"Good Faith" Pricing Bills

The industry pricing practices bills introduced by Congressman Wright Patman and Senator Estes Kefauver in the House and Senate, respectively, are not making much progress at the moment. So far as the Patman bill is concerned the delay is caused by the fact that the chairman of the House Judiciary Committee, Emanuel Celler, who has long been antagonistic to the bill, has made no plans to hold hearings on the measure. He says that he does not intend to consider the bill until some other bills, such as the civil rights bill and the premerger notification bill, are disposed of. However, Mr. Celler's action can be circumvented if a majority of the members of the house (218) will sign a petition discharg-

ing the bill from the committee and bringing it directly to the floor of the House. This action was threatened last year, but the committee reported a similar bill under another representative's name and number. This resulted in confusion, but in the end the Patman bill was passed by 393 to 3.

The Kefauver bill in the Senate is now being scheduled for closed door consideration by the Senate Judiciary Committee. Three attempts were made to hold such a session, but due to the absence of Senator Everett Dirksen of Illinois—who had requested that the subcommittee not consider the bill unless he was present—no session was held. It is thought that the session will be held whether or not Senator Dirksen is able to attend. It is generally thought that a majority of the members of the subcommittee will approve the bill which will then move on to the full committee. Here the opponents of the bill hope to wage a strong battle hoping to keep it bottled up in committee so it will not come to the floor of the Senate for a vote. There is considerable fear by the opponents of the measure that if it reaches the Senate floor it may be passed.

Drug Labeling Decision

In a case involving a manufacturer's distribution of false or misleading circulars distributed during lectures which followed the interstate shipment of the drug products by two weeks, the U.S.Supreme Court refused to review the decision of the Third U.S. Circuit Court of Appeals which found for the Food and Drug Administration. Also in the decision which the court refused to review was the finding that the phrase "adequate directions for use" is not void for vagueness.

H. I. F. Report

Despite the research accomplished by the Health Information Foundation, "much work remains to be done in closing the gap between advances in medical science and the use of health services by the public," said George F. Smith, president of Johnson & Johnson, following his reelection as board chairman of the foundation. "Fortunately, we are making headway," he said, "and will continue to enhance our present system of medical care through the initiative and efforts of free enterprize. The solid support of the drug, pharmaceutical, chemical and allied industries is needed to assure a continuation of the research program now beginning to mature and materialize."

Three new directors were elected by the foundation: Harry J. Loynd, president of Parke, Davis & Company, who also was appointed to the foundation's executive committee; William B. Graham, president of Baxter Laboratories, who also became a member of the finance committee; and J. H. Fitzgerald Dunning, president of Hynson, Westcott & Dunning. George Bugbee continues as president of the foundation; Henry S. McNeil, president of McNeil is secretary; and S. Barksdale Penick, Jr., president of S. B. Pencik & Company, is treasurer.

Trademark Association Officials

Edgar S. Bayol, press counsel of the Coca-Cola Company, was reelected president of the U. S. Trademark Association last month. Elected from this industry was L. C. Ehrhardt, of McKesson & Robbins, as vice-president; and the following as directors: James E. Archer, American Cyanamid Company; Victor D. Broman, Union Carbide Corporation; Dudley Browne, American Home Products Corporation; Thacher H. Fisk, The Kendall Company; Robert H. Hosick, The Upjohn Company; Norman St. Landau, Johnson & Johnson; Edward Merkel, Procter & Gamble Company; and Mrs. Lenore B. Stoughton, Rogers, Hoge & Hills.

Uniform State Trademark Laws

Nineteen states have thus far enacted trademark statutes based on the model state trademark bill originally drafted by a committee of the U. S. Trademark Association. These states are: Arkansas, Colorado, Georgia, Illinois, Indiana, Kansas, Louisiana, Maryland, Michigan, Mississippi, New Hampshire, New York, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Utah, and Washington. The bill is pending in Florida, Oregon and Vermont.

According to Gerrit P. Groen, trademark attorney, "The model bill is a worthy counterpart to the federal law and essentially protects those not eligible for federal registration and as such engaged exclusively in intrastate activities. "He said the primary advantages of this law include protection of common law rights, simple registration procedures, and the weeding out of abandoned registrations.

According to Arthur A. March, trademark attorney, the uniform state trademark law has been favorably received by those courts which have had occasion to interpret it. The ability of the courts on the state level to continue to effectively protect common law rights in trademarks have been outstanding features of this law, he said. Close cooperation between the U. S. Trademark Association and several secretaries of state have been required for various administrative interpretations of the state law, but this cooperation has resulted in a very effective program of administering the law, he added.

Modernizing A Trademark

A valuable trademark should be properly cared for in a modernization program, according to Beverly W. Pattishall, trademark attorney. "The considerations of up-dating a trademark are numerous," he said, "and among the most important is that the trademark owner, his advertising, sales and promotion experts and his lawyer be in substantial agreement on all phases of such a modernization program."

Mr. Pattishall presented four basic rules to be considered in modernization: 1. If a considerable change is called for, make it in two or three steps; 2. retain the principal characteristics of the original mark; 3. be sure that the modernization does not result in proximity to another mark in a related field; and 4. be sure that the change is not so drastic as to prevent the courts from following the standard rule that modernization does not result in abandonment of the original mark.

ROCHE Aromatics *by Joseph Kalish, Ph. D.*

The Hoffmann-La Roche plant for the synthetic manufacture of terpene aromatic chemicals is ready for commercial production. What was originally conceived as a vertical operation to reduce the company's dependence upon a natural raw material, lemongrass oil, which fluctuated widely in availability and price, has now become, in addition, a stabilizing factor in the market for linalool and its esters. This remarkable accomplishment is the result of collaboration between a brilliant technical group and far-seeing management willing to invest the necessary time and money in long range research.

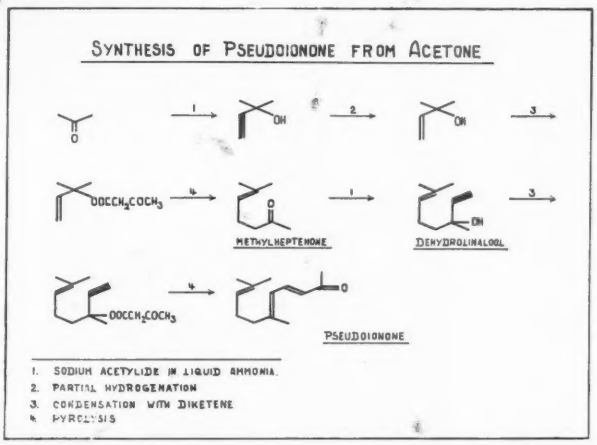
The company is now definitely in the business of manufacturing and selling aromatics as pure chemical entities, in volume dictated by demand and plant capacity and not as by-products. Literally hundreds of aromatic chemicals have been synthesized with

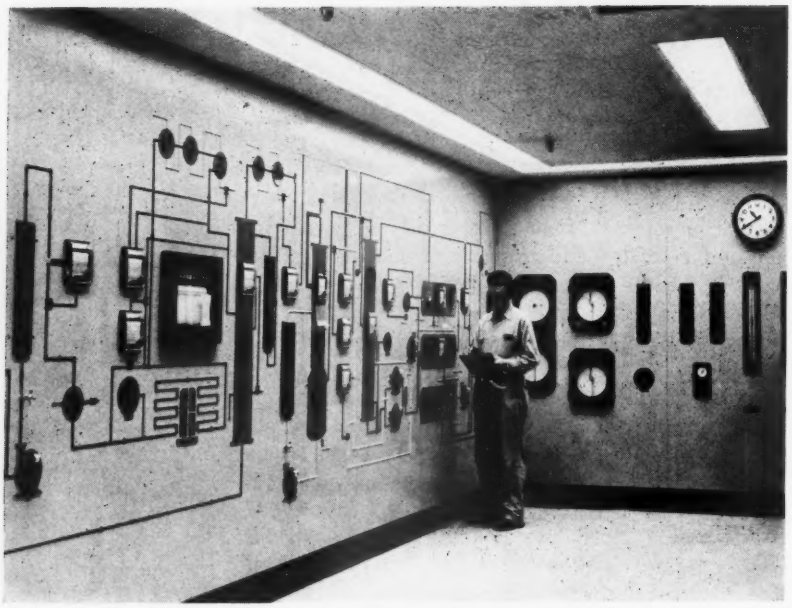
From front to rear—general process building, diketene building, ethinylation building

DR. ALFRED OFNER

these new methods; however, the first major products are to be linalool, linalyl acetate and a number of smaller volume chemical individuals not previously available in commercial quantities. The new Aromatics Division is under the immediate supervision of Philip C. Burnham, who will be the Division's Sales Manager, while Burton T. Bush, Jr. is Assistant Sales Manager. Although the company plans to promote the products of its new Division by means of advertising and a new house organ, and has been in direct contact with major consumers, it contemplates distribution through presently established trade channels. The company definitely does not plan to market perfume or flavor blends or compounds.

Formerly, the Roche process for the manufacture of synthetic vitamin A started with citral from lemongrass oil which is converted to pseudoionone. This is then processed to vitamin A and beta carotene and to vitamin E, which enjoys increasing demand in animal and poultry feeds. The necessarily large scale operations were tied to the availability and price of a natural raw material, lemongrass oil, available only from foreign sources and subject to speculation as well as natural growing conditions. The reported market price of this oil has fluctuated from a low of $1.20 in 1948 to a high of $4.00 in 1951 with current



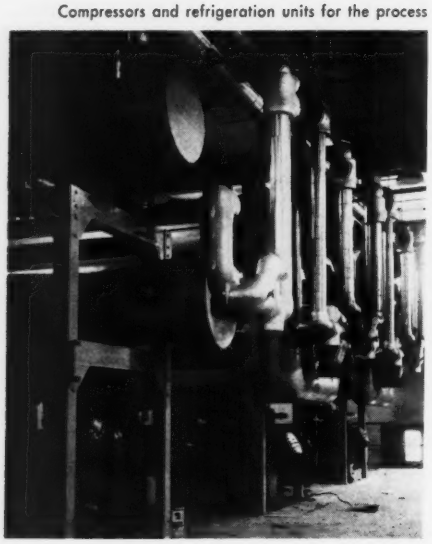


Flow panel for diketene manufacture

quotations at about $1.40. Investigation was initiated over five years ago to develop a total synthesis of citral from cheap, plentiful starting chemicals. A team of chemists, chemical engineers and engineers headed by Dr. Alfred Ofner and backed by management developed a process and designed a plant, culminating in the total synthesis of pseudoionone.

Classical synthetic methods had to be by-passed, since a process based upon isoprene, in which the steps leading to citral were 90 per cent efficient, was still not commercially feasible. The final result is a clean-lined process flow sheet and a flexible manufacturing plant using know-how acquired in the development and operation of the Isler process for making vitamin A. A number of reactions, including a totally new one giving the conjugated double bond system of pseudoionone directly from an acetylene derivative, have been skillfully strung together. Acetylene, by means of acetylene and liquid ammonia, combines with acetone to produce methyl butinol (ethinylation). Using a special catalyst, this compound is partially reduced to methyl butenol or dimethylvinyl carbinol. Reaction with diketene gives the acetoacetic ester of methyl butenol which when heated to 140-160°C. loses carbon dioxide and rearranges to methyl heptenone in high yield (ketonization). These essential steps are repeated and lead to the alternate final products. Methyl heptenone, by means of metallic sodium, liquid ammonia and acetylene, leads to dehydrolinalool. Undergoing ketonization by treatment with diketene followed by pyrolysis at 170—190°C., dehydrolinalool gives pseudoionone, the yield being about 35 per cent based upon acetone and acetylene. Branching off before the second

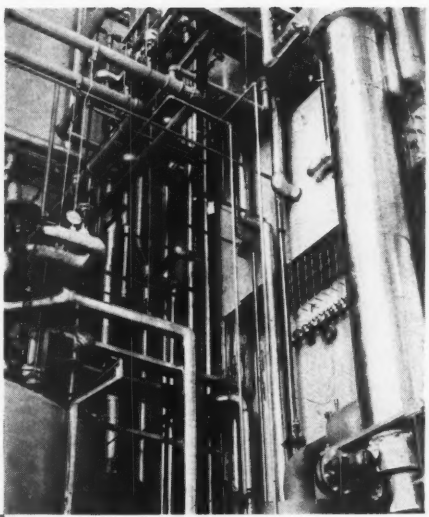
Compressors and refrigeration units for the process



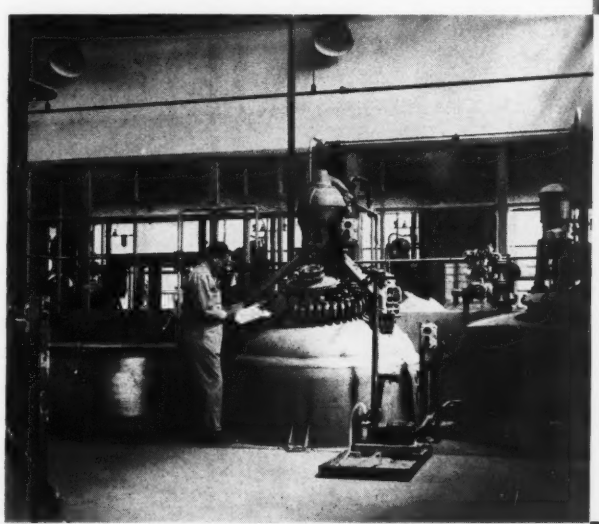
reaction with diketene, the process can yield linalool by partial hydrogenation of dehydrolinalool, or the latter can be acetylated and partially reduced to linalyl acetate.

Acetylene is made from carbide. Diketene is made by the pyrolysis of acetone followed by condensation, the by-product methane being used as a fuel. The diketene manufacturing process is a continuous one but all other steps are flexible batch operations permitting quick change from one end-product to another, as desired. Theoretically, 290 parts by weight of acetone plus 52 parts of acetylene and two parts by weight of hydrogen can yield 192 parts of pseudoionone along with 88 parts of carbon dioxide and 64 parts of methane. In making linalool, 174 parts of acetone, 52 parts of acetylene and 4 parts of hydrogen can theoretically produce 154 parts of linalool, 44 parts of carbon dioxide and 32 parts of methane.

The plant consists of four buildings: the building housing the acetylene generators, the diketene building, the ethinylation building and the general process building. The project required integration of



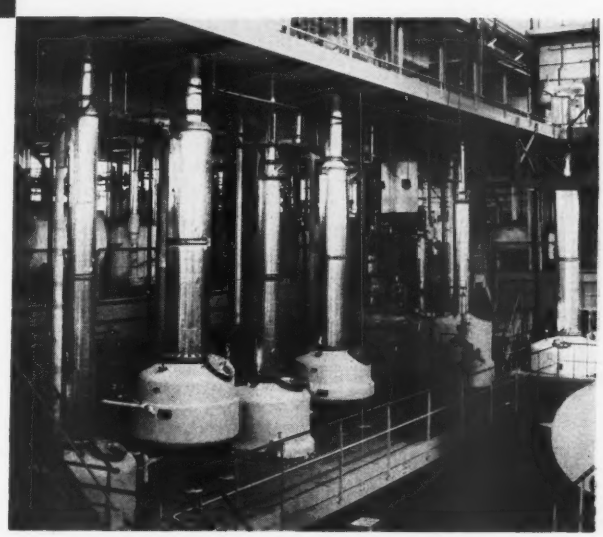
Pattern of pipes-diketene building



Processing equipment

chemical process with the engineering and construction of equipment and buildings because of the size and complexity of the operation. Special attention has been given to safety engineering, necessary in handling tremendous quantities of acetylene and diketene. Since the economics of the process require large scale operation, the plant was originally designed to large capacity, rather than on the more usual, conservative approach of a moderate size operation to be increased later on. Extremely large scale refrigeration is required in conjunction with the use of liquid ammonia. The result is an integrated plant built for the process and including the same qualities of flexibility that exist in the process itself. The process scheme may easily be generalized for use with a variety of ketones and aldehydes; side chains may be lengthened, double bonds be shifted, substituents be introduced. Many new compounds have already been prepared and are under investigation for possible use in the fields of vitamins and aromatics.

As contrasted with the natural product, synthetic linalool (and its acetate) is pure and uniform. Its odor does not change from beginning to end on a blotter and the odor is absolutely constant from batch to batch. Because of its purity, synthetic linalool has improved chemical stability, with practically no tendency to discolor. Of major importance to large users, the new linalool will have the price stabilty of a manufactured chemical instead of the unpredictable movement of a natural product subject to speculative influences.



T. G. A. Convention

At the 22nd annual convention of the T. G. A. held at the Waldorf-Astoria Hotel in New York City May 7 to 9, Pierre Harang, Executive Vice-President of Houbigant Sales Corporation, was re-elected President for a second term. Four Vice-Presidents were also re-elected: Jean Despres of Coty, Inc., A. E. Johnston of Colgate-Palmolive Co., C. T. Lipscomb, Jr. of the J. B. Williams Co. and J. I. Poses of D'Orsay, Sales Company. Other re-elected officers and directors were Phillip C. Smith of Yardley of London, Inc. as Treasurer; William F. Denney, Jr. of Frances Denney as Secretary; Gert Keller of Schimmel & Co. and Dr. Lloyd Hazelton of Hazelton Labs. Inc. as Directors representing Associate members; Edward J. Breck of John H. Breck, Inc., Oscar Kolin of Helena Rubinstein, Inc., Wrisley B. Oleson of Allen B. Wrisley Co., Jerome A. Straka of Chesebrough-Pond's, Inc. and Northam Warren, Jr. of Northam Warren Corp. as Directors for a 3-year term. New Directors elected at the convention were Lewis F. Bonham of Bourjois, Inc. and Paule Carey of Tussy Cosmetiques for three-year terms; N. S. Walbridge of Beauty Counselors, Inc. for a two-year term and John E. Hardy of Daggett & Ramsdell, Inc. for a one-year term.

At the annual Toilet Goods Industry Golf Tournament held at the Winged Foot Golf Club on May 6, the winners of the trophies were T. Bradley of Chas. Pfizer Co., the Cecil Smith Trophy; S. Heuisler of Maryland Glass, the B. M. Douglas Trophy; George Davidson of Art Decorating Co., the B. E. Levy Trophy; and M. Dresden of the A. H. Wirz Co., the Canadian TGMA Maple Leaf Trophy. Bob Felton of Felton Chemical Co. made a hole-in-one. Two hundred and seventy-three golfers participated in the tournament and over 300 attended the dinner.

Six graduate students of the Amos Tuck School of Business Administration of Dartmouth College received prizes at the Convention in the Charles S. Welch Essay Contest, the judges being Thomas R. Farrell of "Drug and Cosmetic Industry", Dan Rennick of "American Druggist" and the Dean of the Amos Tuck School. The research project covered motivation for purchases of perfume, hand lotion and shampoos and the winners were Robert Glueck, first prize; Robert Kurland, second prize; David Dodd, third prize; Donald Lehrer, Richard Muney, Nathan Metzger, honorable mention. The awards were presented by Herbert F. Storfer of Parfums Corday, Inc.,

(*Continued on page 853*)

H. **Hydrogenated**
   1. Hydrogenated Lanolin
   2. Hydrolan

I. **Ethylene Oxide Derivatives**
   1. Lanogel
   2. Etholan
   3. Ethoxylan
   4. Atlas G-1790
   5. Atlas G-1425, G-1441, G-1471
   6. Solan
   7. Polychol
   8. Solulan

J. **Lanolin Absorption Bases**
   1. Alcolan
   2. Amerchol Bases
   3. Nimco Cholesterol Bases
   4. Protegin X
   5. Iso-Lan
   6. Isocreme
   7. Cremba
   8. Hydrophil
   9. Aquaphor
   10. Eucerin
   11. Sorbotex
   12. Falba
   13. Fanning Absorption Base
   14. Morningstar Absorption Base
   15. USP Absorption Base
   16. British Pharmacopoeia Base

K. **Special Lanolin**
   1. Hychol
   2. Nimco Super Lanolin

L. **Label Nomenclature**

LANOLIN Derivatives and Modifications

(PART 2)

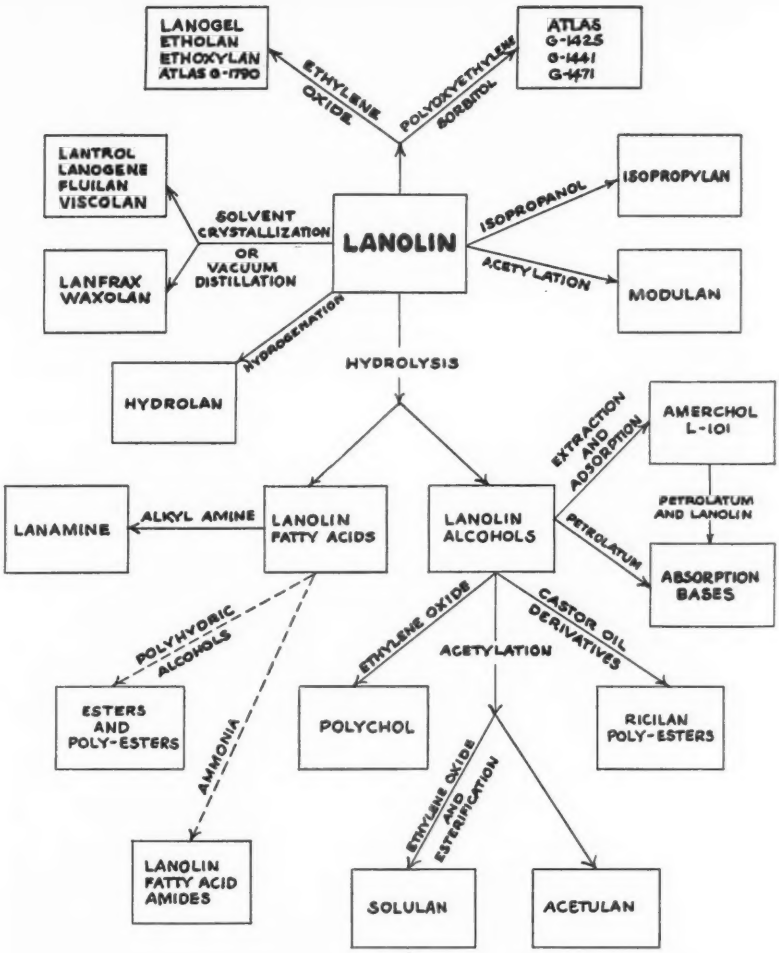
by Gabriel Barnett
COTY PRODUCTS CORP., NEW YORK 19, N.Y.

H. Hydrogenated Lanolin

The preparation and properties of hydrogenated lanolin have been reported in recent literature [47,65,66,67,68]. The method described by Fayaud is considerably more drastic than the one used for the hydrogenation of vegetable oils. The mass is thoroughly mixed with a special catalyst (unspecified), heated to about 330°C. under pressure of 180 atmospheres which is gradually increased to 350 atmospheres. In contrast to this procedure, hydrogenation of vegetable oils for hardening is generally carried out at 220°C. and 15 atmospheres pressure. The absorption of hydrogen by the lanolin is rapid and is completed in 20 to 25 minutes. The hydrogenated mass is then filtered, washed, and dried. The new material obtained is white, odorless, non-tacky, and with a water absorption capacity nearby one and one-half times that of lanolin.

The hydrogenolysis of lanolin which has been reported in the Japanese patent literature[69,70] and described by Fayaud and Rivera[65] results in similar reduction of the esters present.[9] Eisner and co-workers[9] indicated however, that other more drastic changes take place with this very high pressure and temperature hydrogenation, based on an analysis of the product obtained by Fayaud and Rivera.

Fayaud concluded that it is not possible at the present time to state what molecular transformation had taken place, nor to submit complete data on the exact composition of hydrogenated lanolin. However, it has been found to be greatly different from that of ordinary lanolin. He stated that "the hydrogenation process is not limited to simple saturation of the double bonds, but goes well beyond this".[67] The reaction process yields dihydrocholesterol, other hydrogenated



LANOLIN DERIVATIVES

G. BARNETT APRIL 1957

sterols, some saturated alcohols, and small quantities of hydrocarbons. It is of considerable significance to note that there are practically no esters found in hydrogenated lanolin, for the saponification number decreased from 91 to 3.5. The iodine value decreases from 30 to 12, the total extinction of which is impossible because cholesterol and its derivatives absorb much more iodine than the theoretical quantity.[29]

It would appear from the virtual absence of esters that conversion to the component lanolin alcohols and acids had occurred initially. The acid value of 0.3 for the hydrogenated product would in turn indicate that the liberated fatty acids were simultaneously reduced to the corresponding aliphatic alcohols, similar to the results described by Eisner using the sodium reduction technique.[9] The exact composition is still under investigation, and when determined, will ultimately contribute to the development of newer lanolin derivatives.

Hydrogenated lanolin is claimed to preserve all the good qualities of lanolin, and is free of all the negative ones, such as tackiness, color, and odor. It is recommended for use in cosmetics and pharmaceutical ointments where its greater hydrophilic power over lanolin is of advantage.

Lanolin Derivatives

1. Hydrogenated lanolin (M. W. Parsons-Plymouth.).
2. Hydrolan (Esperis Co., Milan, Italy).

I. Ethylene Oxide Derivatives

The reactivity of the hydroxyl groups in the hydroxy esters of lanolin has been used to advantage in preparing water-and alcohol-soluble compounds of lanolin, its component alcohols, and fatty acids. The hydrophilic compounds are made by reacting lanolin (or its derivatives) with varying amounts of ethylene oxide to form polyoxyethylene lanolins (or its derivatives). The polyoxyethylene chains form an ether linkage to the hydroxyesters, and make the lipophilic molecules more soluble in water and correspondingly less soluble in oil.[47,71-78] Some lanolin ester is split during ethoxylation to lanolin polyglycol ethers and polyglycol esters. It should be noted equal

(*Continued on page 845*)

A.P.M.A. Meeting

An "alarming amount of pseudoscientific gobbledygook put out by some manufacturers" of pharmaceutical preparations, as well as material quoted out of context, were sharply criticized by Dr. Aims Chamberlain McGuinnes, special assistant for medical and health affairs to the Secretary of Health, Education, and Welfare, before the annual meeting of the American Pharmaceutical Manufacturers Association. It is disturbing "to see good, solid scientific material quoted out of context—perhaps only a shade so, but enough to color the interpretation of the reader and not give him all the facts in the case." he said. While expressing awareness of the pressure under which the industry operates. Dr, McGuinness said that manufacturers must concede that "maintenance of the highest level of secintific fact in pharmaceutical promotion is a just and proper part of the responsibility of free enterprise and professional freedom."

The busy practitioner received more than 4,000 pieces of literature from the pharmaceutical manufacturer last year, against 2,900 pieces the year before, he said, imposing a heavy burden on the doctors. Although much of the material distributed is excellent, and serves as a "tremendous" educational force, he added, "too much of it is less good than it should be—a fact with which I am sure you will all agree." Dr. McGuinnes said that he based his observations on his experiences in private practice. As to the material containing pseudoscientific gobbledygook, he said. "Fortunately this type of promotional material is usually self-evident, and—I hasten and am happy to add—is not characteristic of the material put out by the member firms of this association."

Dr. McGuinnes said he found "considerable truth" in charges that pharmaceutical promotional material seeks to convince doctors to prescribe higher priced therapeutic compounds in place of less expensive single-ingredient products.

"To induce the physician to prescribe five dollars worth of medicine when two dollars worth will do the job just as well neither helps the cause of medicine nor shows evidence of professional responsibility," he said, continuing:

"There must be ever-mounting pressure within the industry to encourage all drug manufacturers to adopt the uniformly high standards now observed by so many of the major pharmaceutical firms. This is always a sign of a healthy responsible industry. For, while we all recognize that pharmaceutical promotional materials can be a potent force in keeping physicians abreast of new developments, they inevitably will be suspected—and, consequently discarded— if they are not good and deserving of trust."

Speaking on the national cancer chemotherapy program, retiring association president, Dr. Robert K. Cutter, said that the pharmaceutical manufacturing industry faces two manifest duties: 1. To cooperate whole-heartedly with any program that offers real promise of an improvement in public health; and 2. To exercise extreme care that in the understandable haste to achieve this objective, future scientific development is not throttled by unwise regulation of private industry.

However, Dr. Cutter warned the industry that unless "ground rules" are set up for industry participation in government research programs, including such "crash programs" as the present cancer screening drive, they may slowly devolve into socialistic programs endangering the industry's future. He questions the wisdom of these "crash programs" on the basis that despite their value and objectives, their effect is to strain the nation's limited scientific manpower, siphoning off technical workers needed elsewhere.

Although the industry members have pledged their wholehearted support to the cancer program, Dr. Cutter said they have not received assurances that their patent rights will be safeguarded in the event they discover suitable cancer treatments. He emphasized that he did not feel that one company should have exclusive patent rights to a cancer discovery for the reason that the physician should have the privilege of choosing from the products of more than one company.

However, manufacturers would be unwise to jump into "crash programs" without adequate assurances that free enterprise would be preserved, he added. The government, investing huge sums of money in research, and potentially the biggest purchaser of any

FRANCIS C. BROWN

drug that is discovered, could assume complete control over the industry, he warned. In such an event, the government might buy from a low-bidding company that had contributed nothing toward research and development of the products involved, but who was only capitalizing on the work of others.

Dr. Sidney Farber, chairman of the Cancer Chemotherapy National Committee, gave assurances that problems involved in industry participation in the cancer screening program, such as that of patents, will be solved. The problem of patents is not a new one to the industry or to the field of cancer chemotherapy, he said, adding, "If we knew how to solve it right now I am confident that the answer would get rapid processing by the appropriate agencies of of government. No one would want to be in the position of witholding help in the area of cancer." Dr. Farber emphasized that the program is a voluntary one in which those who participate may do so to the extent which each elects. "We of course hope for great and full industry participation,"he said. "If the present rules do not bring the cooperation that we believe can be elicited, then it is obvious that the rules must be modified until they do so."

U.S. Food and Drug Commissioner George P. Larrick said that the Food and Drug Administration feels it would be "good practice" for pharmaceutical manufacturers to include copies of the "official brochure" on a new drug with each mailing announcing the new product. Stating that the FDA processes over 500 new drug applications each year, Mr. Larrick emphasized that this amount of new products requires considerable review and study on the part of the physician if he wants to familiarize himself with them. For this reason, he said, the FDA is "at times perturbed" that more of the official brochures are not distributed to physicians. These brochures, he said, frequently involve considerable work on the part of both the company and FDA scientific staffs, sometimes in dealing with only a few sentences or paragraphs, to make certain that the doctor receives the correct information.

The FDA should not and cannot exercise censor-

(Continued on page 854)

The Antibacterial Activity

by Irvin H. Blank, Ph.D., THE DEPARTMENT OF DERMATOLOGY, HARVARD MEDICAL SCHOOL
Marjorie Moreland, M. S., THE SUMMIT DIAGNOSTIC LABORATORY, SUMMIT, NEW JERSEY
Ruth K. Dawes, B. S., THE DEPARTMENT OF DERMATOLOGY, HARVARD MEDICAL SCHOOL

No one doubts that general body odor increases when hygiene is poor. Under these conditions, at least part of the odor might be caused by bacterial decomposition of various skin secretions. Attention has been focused on this aspect of body odor by the work of Killian and Panzarella[1] and Shelley, Hurley and Nichols[2]. Both groups of investigators showed that the odor level rose as sweat gland secretions underwent bacterial decomposition. For the control of body odor, it therefore becomes important to reduce bacterial growth on the cutaneous surface.

There can be little doubt that good skin hygiene can not only reduce the total number of bacteria on the cutaneous surface, but can also remove odorous substances, no matter what their origin. Therefore, the first step in odor control is good skin hygiene. For some individuals, this is not adequate to prevent axillary odor, and additional measures must be employed.

For a number of years, various aluminum salts have been used in an attempt to decrease axillary perspiration. It is common to call such preparations antiperspirants, even though many consumers use them primarily as deodorants without inquiring whether they function as deodorants by repressing the secretion of an odorous compound or by preventing the development of odor in secretions.

One of the conclusions drawn by Shelley, Hurley, and Nichols[2] is that "the deodorant action of aluminum chloride preparations is two-fold in mechanism. There is both an antibacterial effect, thus preventing odor development, and a chemical change, thus rendering the normal odoriferous products of bacterial

*From proceedings of the Scientific Section of the Toilet Goods Association, No. 27, May, 1957.

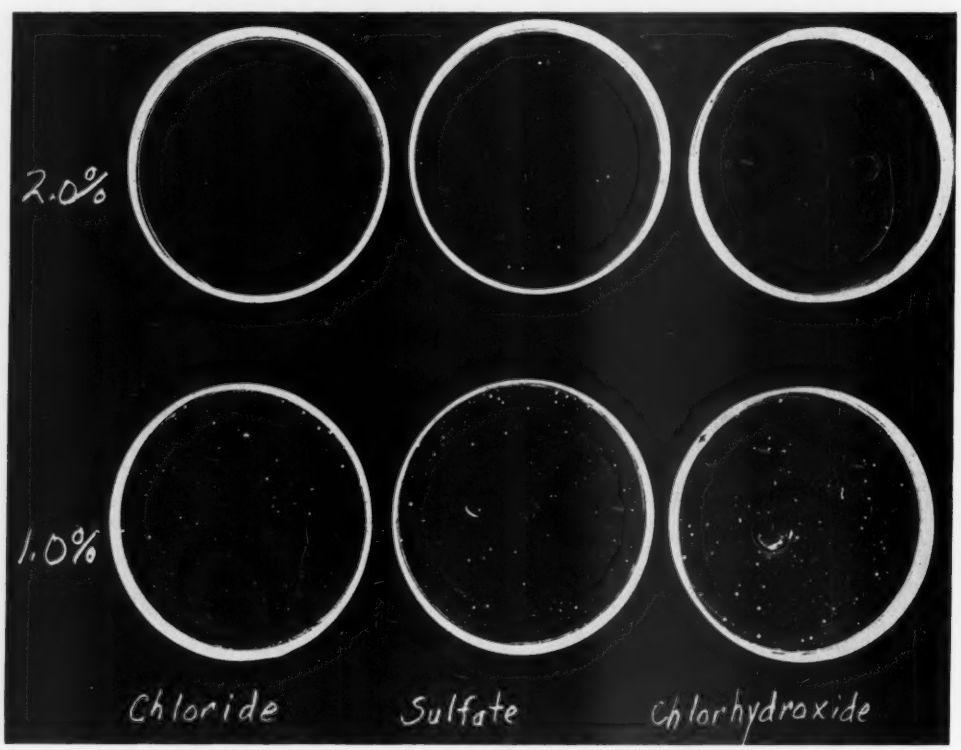


Figure 1. The growth of micrococci from the wash waters of sheets of hydrated callus pretreated with 1 and 2 per cent aqueous solutions of three aluminum salts.

# of Aluminum Salts

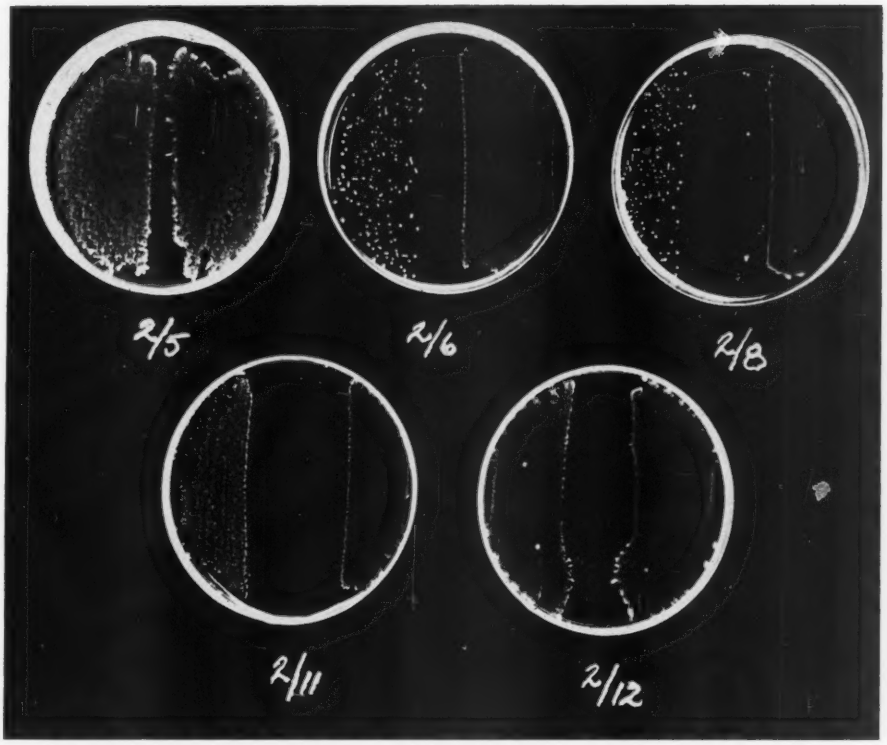


Figure 2. Bacterial growth from left and right axillae. Right axilla (right half of plates) was the control side. No aluminum salt was used on the left axilla from 2/1 to 2/5 inclusive. One-half milliliter of 20 per cent aluminum chloride and 5 per cent urea was used in the left axilla from 2/6 to 2/8 inclusive and nothing was used from 2/9 to 2/12.

decomposition inoffensive." They showed that axillary hairs were often sterile after application of 25 per cent aluminum chloride solution for 5 minutes on each of five successive days. In discussing the bacteria responsible for apocrine odors, Strauss and Kligman[3] state that the proprietaries containing aluminum salts are "antibacterial and when used daily in high concentrations may reduce the bacterial population greatly."

During the last fifty years, there seems to have been a surprising lack of interest in the antibacterial properties of aluminum salts. Aluminum preparations are the most commonly used antiperspirants, and an aluminum preparation (Burow's solution) is frequently used dermatologically. The buffer capacity and the astringent action of Burow's solution are discussed in dermatological literature, but little reference is made to its antibacterial action. The *U. S. Dispensatory* refers to the antiseptic property of alum, Burow's solution, aluminum chloride, and aluminum sulfate. Soon after Burow's solution was developed, it was frequently used in the treatment of diseases of bacterial origin, such as furunculosis[4]. This preparation is now, however, most often used for non-bacterial cutaneous diseases, and its anti-inflammatory action is stressed rather than its antibacterial action.

We have been unable to find many references in the literature to the specific germicidal action of the aluminum salts. Kionka[5] reported that a 20 per cent solution of a mixture of aluminum lactate and tartrate killed streptococci in 5 minutes. A similar solution, to which boric acid was added, was said to kill *E. coli* in 15 minutes; a 5 per cent solution of this latter mixture killed both streptococci, and *E. coli* in 60 minutes. In a recent book on antiseptics, edited by Reddish, the study of Sprowls and Poe[6] is cited as showing that aluminum chloride is not particularly effective against *S. typhosa* and *M. pyogenes var. aureus*.

Our interest in the antibacterial properties of the aluminum salts was stimulated not only by recognition that these salts function as deodorants by virtue of their antibacterial action, but also by the observation that in the test tube an aqueous solution of aluminum chlorhydroxide ($Al_2(OH)_5Cl$) as weak as 1 part in 100,000 appeared to kill, in 5 minutes or less, the type of micrococci found on the cutaneous surface. We

(Continued on page 838)

S.C.C.
MAY, 1957

The Society of Cosmetic Chemists Special Award was presented at the Society's Spring meeting to Dr. A. J. P. Martinand Dr. A. T. James for their development and application of gas chromatography. Dr. Stanford Moore of the Rockefeller Institute described the significance of the work, and the award was presented by Sabbat J. Strianse, President of the Society.

The meeting, as on previous occasions, was devoted primarily to the presentation of scientific papers. The lead-off paper, by *Albert R. Latven*, Executive Director of Pharmacology Research, Inc., Darby, Pa., discussed **"Fundamental and Comparative Actions of Cleansing Creams"**, primarily in terms of techniques used for evaluating cleansing efficacy rather than by the presentation of specific data. Using photography and ultra-violet light at a grazing angle, fluoresence demonstrated the presence of "sebum plaques" distinct from the usual sebaceous secretion. According to the author, these plaques are known to be involved in acne, the formation of blackheads and other skin blemishes and are present in greatest number and size on face and upper portion of the body. Although soap removes ordinary secretions and surface dirt it does not affect these surface plaques. Organic solvents are also without effect while polyethylene glycol and olive oil are effective, as are commerical cleansing creams tested.

Dr. Paul G. I. Lauffer of the House of Tangee discussed **"Some New Keys to Cosmetic Chemistry —1956"** on the basis that the development of better cosmetic products rests largely upon the advancing knowledge of the chemical composition and functioning of the skin. Again, he calls to the attention of cosmetic chemists that there is much of practical value as well as inspiration to be gained from study of work done in allied chemcial and biological fields.

"Problem Solving; Some Thoughts on Methods and People" was discussed by *Derek E. Till* of Arthur D. Little, Inc. in terms of the interrelation of the theoretical approach, the experimental approach and operational creativity.

A. R. Marks and E. Budzilek of the Aerosol Division of Wheaton Plastics Company discussed **"Plastic Coated Push Button Containers"** and the authors touched upon the significance of proper bottle design, factors influencing the weight of the plastic coating and quality control procedures.

Charles A. Dittmar of B. F. Goodrich Chemical Company presented the paper on **"A New Water Soluble Polymer for Cosmetic Compounding"** —Carbopol 934. This is a high molecular weight acid polymer which as a salt imparts high viscosity to aqueous solutions. It is especially useful in stabilizing suspensions and emulsions and can be used as an humectant and to thicken some non-aqueous liquids.

Dr. Thelma G. Warshaw discussed **"Some New Considerations about the Chemistry of Acne Vulgaris"** on the basis that excessive sweating rather than hormonal imbalance at puberty is a major factor in acne. The use of aluminum antiperspirants, according to the author, are useful in treatment.

D. L. Andersen, J. W. Opieand A. J. Freeman of General Mills, Inc. Discussed **"A New Family of Amphoteric Surface Active Agents: Fatty Amino Acid Derivatives."** These products are derived from the reaction of a primary fatty amine and methyl acrylate, to add either one or two moles of the acrylate. These products have controllable surface active properties offering a wide range of possible application in cosmetic formulation.

The Analytical Chemistry

by A. Pozefsky and M. E. Grenoble

GENERAL ELECTRIC CO., SILICONE PRODUCTS DEPARTMENT, WATERFORD, N.Y.

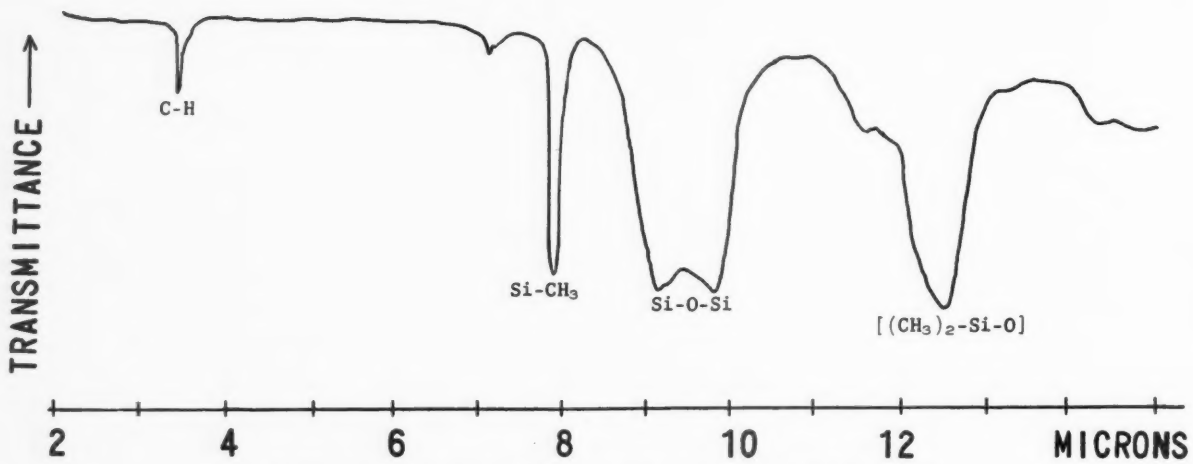


Figure 1A—Infrared spectrum of a typical dimethyl silicone fluid (General Electric Velvasil®).

In a relatively short period of time silicones have had a marked influence on many cosmetic and toilet goods formulations. We at the General Electric Company can recognize this by the increasing sales of silicones to your industry, by the number of products on store shelves which now incorporate silicones, and especially by the frequency with which outside laboratories request information on methods for the analysis of silicones. In fact, the number of such requests indicates that there is a real need for a better understanding of analytical methods which are applicable to silicones.

In an industry as competitive as yours, the analytical chemist not only is faced with controlling his own products, but also with finding out what the competitor is using in his. Over the years the Silicone Products Department of the General Electric Company has had considerable experience in the analysis of all types of silicones used commercially, and in particular, we have had occasion to examine many cosmetic and toilet goods products to determine not only the type of silicone being used, but also the quantity. The purpose of this paper is to describe some of the methods and techniques which we have found particularly useful in our work and which may be of help to you.

Infrared absorption spectroscopy is generally the most rapid and definitive analytical tool one can bring to bear on problems involving silicone analysis. This statement derives from the fact that not only do silicones have very characteristic infrared spectra, but, in addition, these spectra are relatively very intense. Thus, the following discussion will be based mainly on the spectral analysis of silicones in cosmetics and toilet goods, and will be divided into three parts:

I—The qualitative identification of silicones.

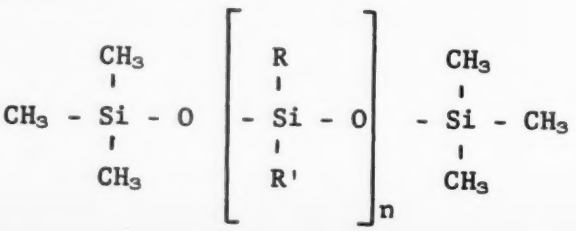
II—Quantitative analysis.

III—Illustrative applications to commercial products.

Our interest will be centered on the analysis of only the silicone portion of formulations. All infrared data presented in this paper were obtained on a Perkin-Elmer Model 21 Infrared Spectrophotometer. CS_2 or CCl_4 was used as the solvent in all the quantitative work, and quantitative spectra were obtained using solven compensation in the reference beam of the instrument.

I. Qualitative Silicone Spectra

Today there are two types of silicone polymers which have found wide acceptance by your industry. These are typified by the following general structural formula:



*From proceedings of the Scientific Section of the Toilet Goods Association No. 27, May 1957.

# of Silicones in Cosmetics*

If both R's are methyl groups, then we have the familiar dimethyl silicone fluids (e.g., General Electric Velvasil®). When R is methyl and R^1 is partially phenyl and the remainder methyl, one then has the so-called methylphenyl fluids (e.g., General Electric alcohol soluble fluid). It is these two types of fluids, the dimethyl or the methylphenyl, which are now found

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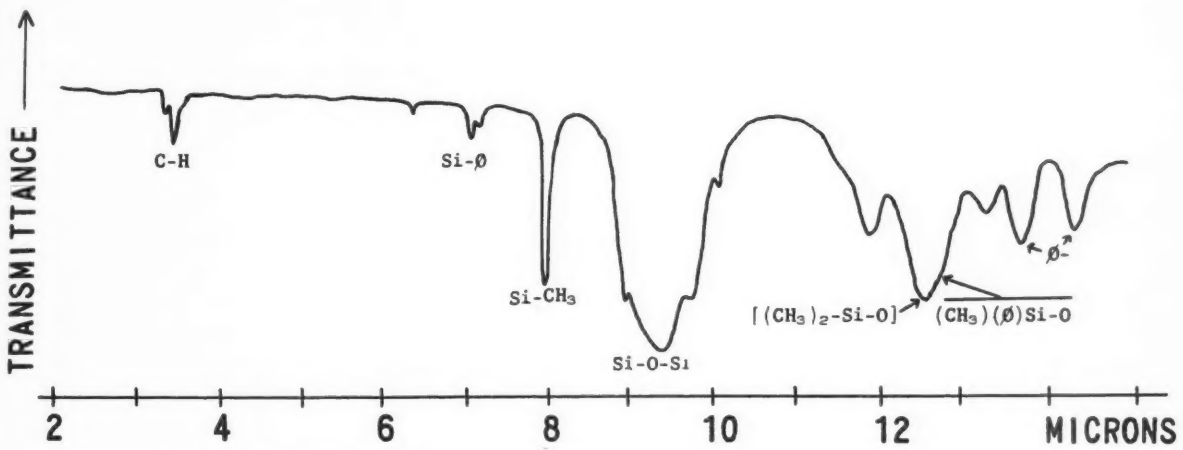


Figure 1B—Infrared spectrum of typical methylphenyl silicone fluid (General Electric Alcohol-soluble fluid).

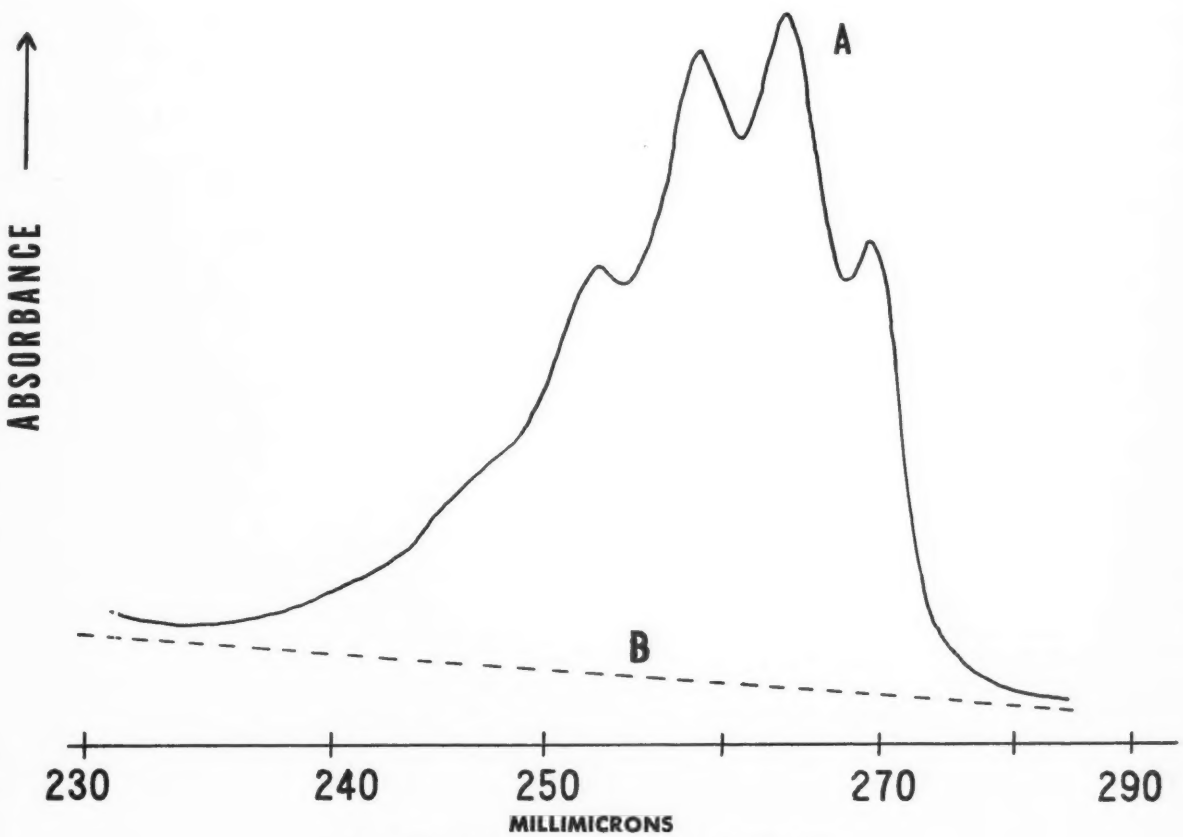


Figure 2—Ultraviolet spectra of (A) methylphenyl silicone fluid and (B) a dimethyl silicone fluid (concentrations $=3.5 \times 10^{-4}$ gms/ml; 1-cm. cells).

Proprietary Association Meeting

SHERWOOD E. SILLIMAN

Referring to the restrictive sales controversy which developed when the changes that occurred in consumer buying habits opened up new retail distribution channels for proprietary medicines, Sherwood E. Silliman, president of the Proprietary Association, told the annual meeting of the association:

"This is but a backwash of the riptide wave now breaking on all points of retail distribution—known as the supermarket. There is nothing new about proprietary medicines being sold in nondrug outlets. Many were sold there before appearing in drug stores. They were sold there before the turn of the century."

However, Mr. Silliman told the proprietary manufacturers that he does not view the problem as beyond solution. If time is taken to get "better acquainted with the leaders of the pharmacist associations at national and state levels to exchange ideas and try to understand each other's point of view, real progress will be made," he said.

Mr. Silliman was reelected president of the association for the coming year. Other officers elected are Robert B. Brown, Joel Y. Lund, and Dewey S. Mims, vice-presidents; Walter R. Beardsley, Frank F. Bell, Alvin G. Brush, Dr. J. Mark Hiebert, and E. T. T. Williams, to three-year terms on the Executive Committee. Dr. Howard A. Prentice, executive vice-president of the association, was also appointed treasurer. James H. Merritt, formerly executive secretary of the Ohio State Pharmaceutical Association, was appointed secretary effective June 15, succeeding the late A. K. Barta.

Speaking on Today's Research Requirements for a Proprietary Medicine, Dr. Frederick J. Cullen, medical consultant for the association, summed up the protection provided the consumer under the Food, Drug, and Cosmetic Act:

"The consumer today is assured that when he purchases a nationally-known drug product, the active ingredients mentioned in the labeling will be included in therapeutic significant quantities. He is also assured that the product is not dangerous to health when used as directed, and that the claims made concerning efficacy are without question—in most instances.

"While there may sometimes be a difference of opinion concerning labeling statements regarding efficacy, such differences are usually due to a conflict in medical opinion. The consumer is further protected in that when a new drug is developed, it may not be marketed until the manufacturer has submitted evidence to the Food and Drug Administration to support his contention that the product is safe for use under the conditions and dosages recommended in labeling."

"A finished product, its labeling, and advertising must be based on the results of true research," added Dr. Cullen, "in order to avoid difficulty with the Food and Drug Administration, and to assure the consumer of all these protections."

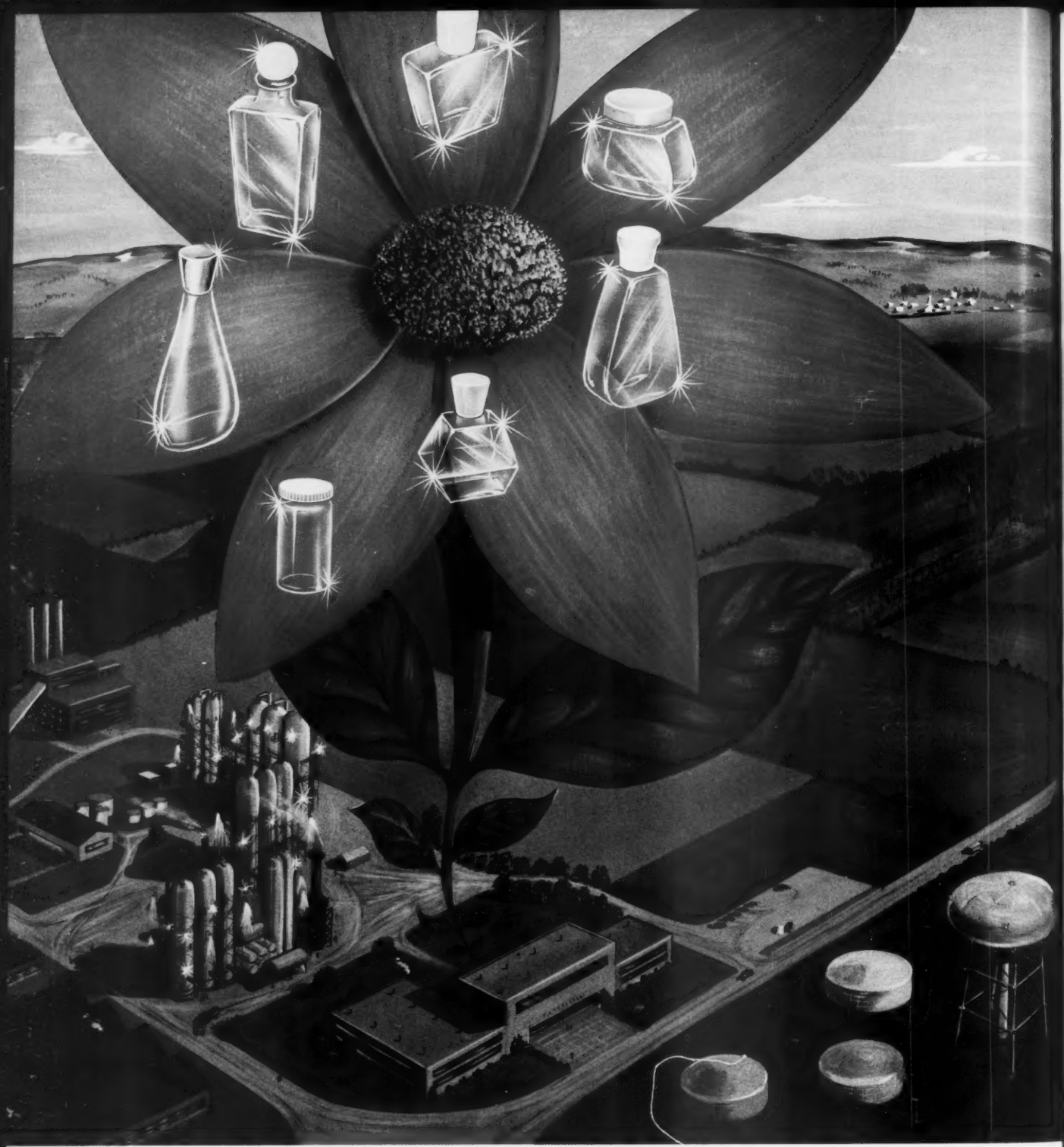
Dr. Cullen concluded by admonishing the proprietary manufacturers: "When you and the members of your companies entered the field of manufacturing and distributing medicines, you accepted a peculiarly distinctive responsibility to your fellow-man. You are supplying products to be used in the relief of human suffering and to aid in the protection of public health. You are part of the great American health team. You and your stockholders are therefore ready and willing to accept the responsibilities that go with your chosen business."

Speaking on the Changing Distribution Pattern, Herman C. Nolen, president of McKesson & Robbins, said there is "growing awareness of the high cost of distribution — generally stated to be more than sixty cents of the average consumer dollar. . . One very common cause of high distribution cost is that of

(Continued on page 820)

Packaging and Selling

Etiquet Roll-on Deodorant
has the rotating ball dispensing principle built into an unbreakable polyethylene dispenser. About 3¼ inches high, the dispenser is sealed by a styrene cap which covers the elongated neck and the spinning styrene ball of ¾ inches diameter. The ball is supported inside the neck by rings molded integrally with the head of the bottle. Inside the cap there is a circular ring which forces the ball against the internal neck rings to shut off flow of the lotion. The dispensers are made by Bradley Container Corporation.



The magic flower

It grows in the fabulous 20th Century Garden of Industry. It is an eternal argument against all commonplace and ordinary things. It is nurtured by constant use, sought by all people. It is *beauty* . . . and beauty in glass is Hazel-Atlas' own particular contribution to the sale of your cosmetics.

Private Mold Opal also Crystal Flint and H-A "Deco-fired" Cosmetic Containers

... glamour in glass

HAZEL-ATLAS GLASS division of CONTINENTAL CAN COMPANY

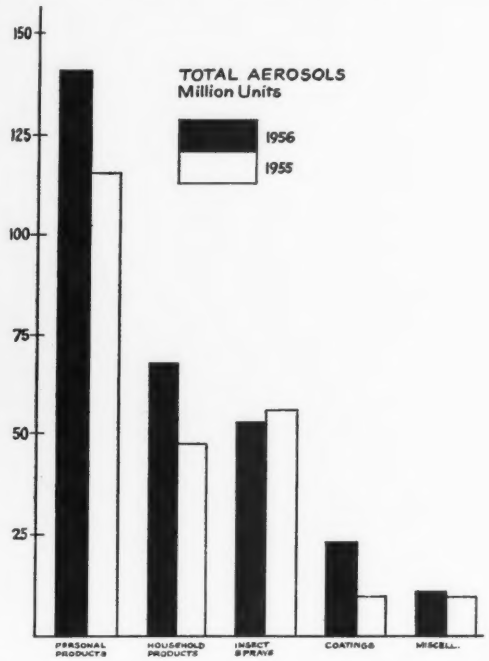
WHEELING, WEST VIRGINIA

AEROSOL Statistics

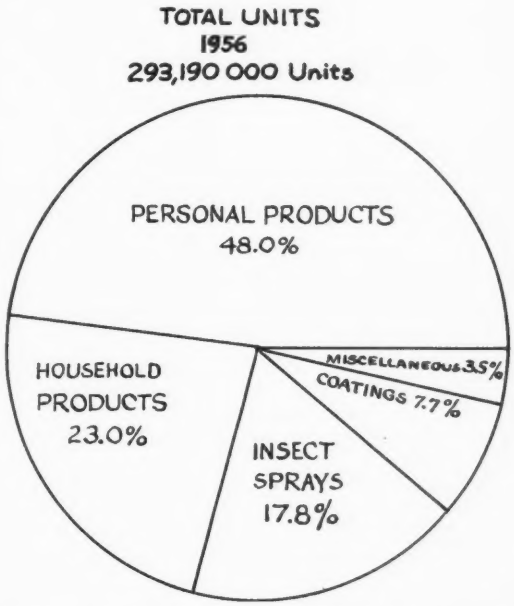
The Sixth Annual Aerosol Products Survey has been completed by the Chemical Manufacturers Association, Inc. The survey as usual covers non-food pressurized packages and does not include such products as whipped cream. Data, as in previous surveys, were tabulated from questionnaires returned by fillers, container manufacturers and valve manufacturers.

The categories were broken down according to five major headings: Personal Products, Household Products, Insect Sprays, Coatings and Miscellaneous. Since the previous figures for high pressure aerosols were small, this category has been discontinued. A new container classification, 16 ounce, but over 12 has been added.

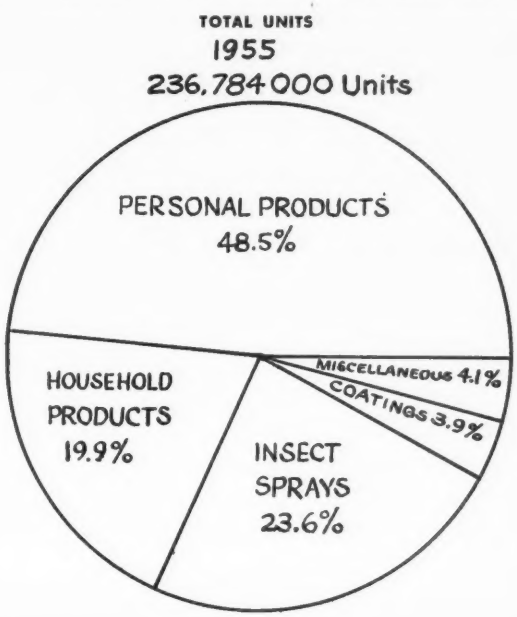
All of the major aerosol container manufacturers reported their total production of aerosol cans, which was 327,955,000 in 1956. Twelve companies submitted their figures for the production and sale of aerosol valves, the total being 357,475,000. Questionnaires were sent to 133 aerosol fillers and 80 companies reported their production. This totalled 293,190,000, but an estimate for total production, including those that did not report, was about 320,000,000.—J. K.



Reported total aerosol units were 293,190,000 in 1956, an increase of 23.8 per cent over the 236,784,000 for 1955. The Personal Products category included 140,382,000 units in 1956 compared with 114,854,000 in 1955, an increase of 22.2 per cent. Household products increased by 43.5 per cent, from 47,105,000 in 1955 to 67,650,000 in 1956. Insect Sprays showed a slight decrease of 6.6 per cent from 55,975,000 in 1955 to 52,246,000 in 1956. Aerosol Coatings showed a substantial increase in 1956, 22,557,000 compared with 9,247,000 in 1955. Units in the Miscellaneous category were 10,354,000 in 1956 ane 9,602,000 in 1955.



As concerns the percentage of units in each of the categories, in 1956 Personal Products accounted for 48.0 per cent of total units against 48.5 per cent in the preceding year. Household Products accounted for



glass containers move more drug products

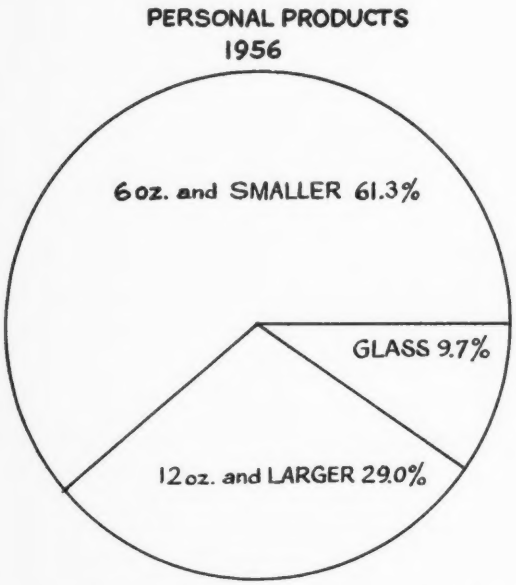
Use **Anchorglass**® *containers sealed with* Anchor® *caps*

. . . because they are preferred by housewives

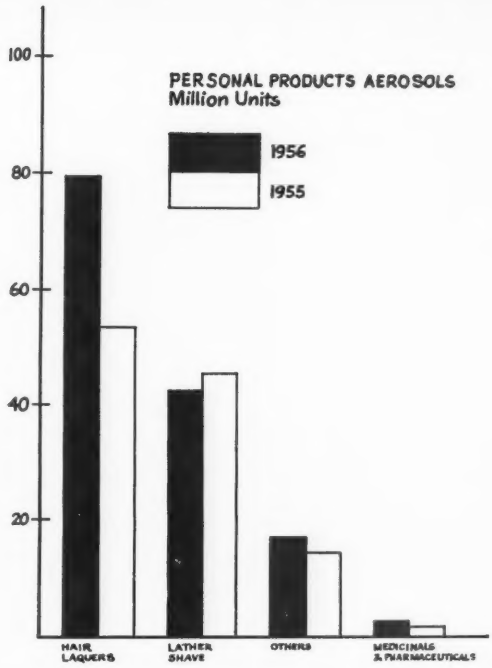
HOUSEWIVES recognize the glass container as the most sanitary package. They prefer glass because it effectively protects the purity, strength and other qualities of the contents until entirely dispensed . . . does not rust or corrode . . . is chemically inert . . . prevents evaporation, leakage or moisture absorption. And they prefer glass containers for ease of opening and resealing. Take advantage of this decided preference—pack and move more of your products in glass . . . in Anchorglass containers sealed with dependable Anchor metal or molded closures.

ANCHOR HOCKING
GLASS CORPORATION
Lancaster, Ohio

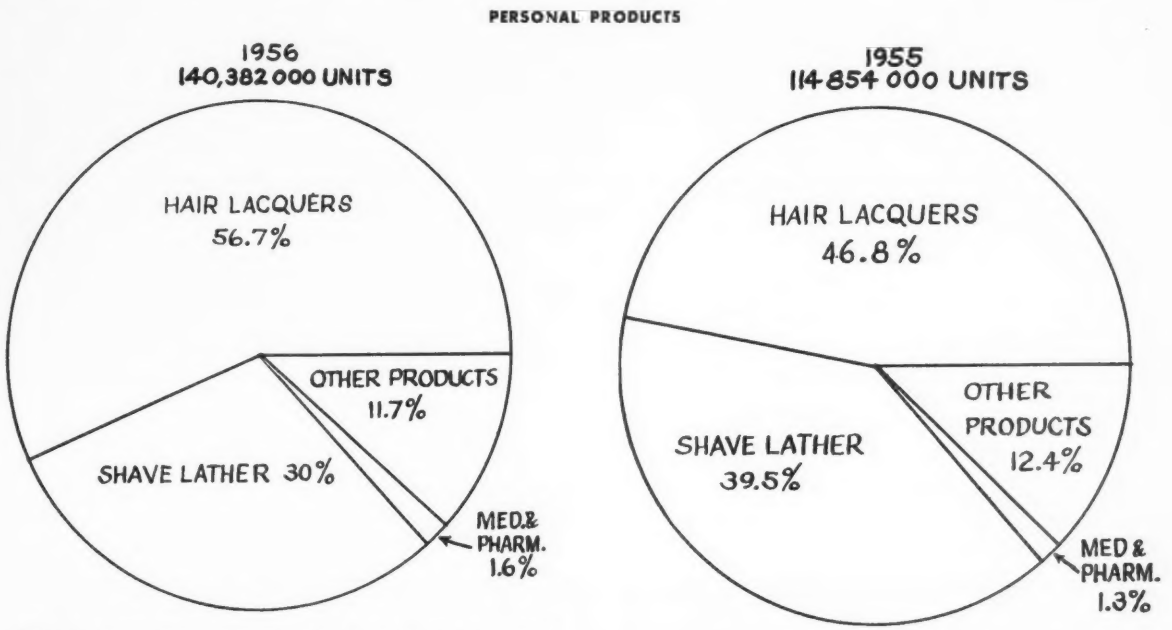
23.0 per cent in 1956, 19.9 per cent in 1955. Insect Sprays were a smaller proportion of the total at 17.8 per cent in 1956 compared with 23.6 per cent in 1955. Coatings accounted for 7.7 per cent in 1956, 3.9 per cent in 1955.



Among Personal Products, the proportion of glass packages increased from 8.2 to 9.7 per cent, smaller packages represented 61.3 per cent of the total in 1956 and 63.7 per cent in 1955, and larger packages were 29.0 per cent for 1956 and 28.1 per cent for 1955.



Hair Lacquers, the largest of all groups, reached 79,641,000 units, an increase of 48.2 per cent over the 53,791,000 units for 1955. Shaving Lather declined 7.2 per cent from 45,387,000 in 1955 to 42,068,000 for 1956. Medicinal and Pharmaceutical preparations remained small, 2,275,000 in 1956 as against 1,455,000 in 1955. Colognes and Perfumes in aerosol form were reported at 8,769,000 for 1956. Other Personal Products, including Colognes and Perfumes for both years, were 16,498,000 in 1956 and 14,221,000 in 1955.



Hair Lacquers accounted for 56.7 per cent of aerosol Personal Products in 1956, 46.8 per cent in 1955 while Shaving Lather was responsible for a reduced share, 30 per cent in 1956 compared with 39.5 per cent in 1955.

(*Continued on page 824*)

Colonial

Cellophane Packaging

For Eye Appeal

EYE APPEAL is "buy" appeal in today's highly competitive marketing picture—and there's nothing that adds more sparkling freshness than Colonial's cellophane packaging. Consumers like that fresh, clear look—that sparkling "top of the morning" freshness that catches the eye and clinches the buy.

When that spotless Colonial dropper assembly is placed automatically into its gleaming cellophane package, it's a guarantee that it's going to stay spotless and dust-free right through to the ultimate consumer.

Colonial's cellophane pack is good insurance against breakage in side-by-side packaging, too.

Let us make free samples to your exact specifications. Contact our representatives listed at right, or write direct.

REPRESENTED BY

CHARLES E. SCHWAB
122 E. 42nd St., New York 17, N. Y.
Ph: OXford 7-0760

HARRY M. GRABER
511 S. 53rd St., Philadelphia, Pa.
Ph: GRanite 6-6311

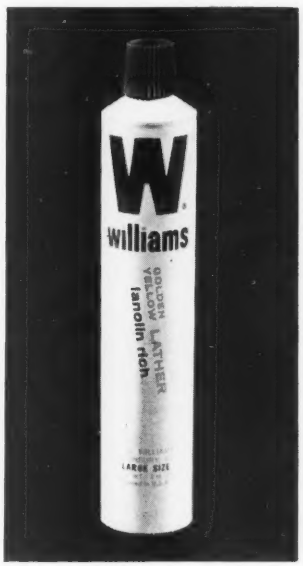
ALLEN J. GRETSCH
327 S. LaSalle St., Chicago, Ill.
Ph: WAbash 2-1619

GABLER & GABLER
435 S. LaCienega Blvd., Los Angeles 36, Calif.
Ph: BRadshaw 2-2995

COLONIAL APPLICATOR CO.
VINELAND, NEW JERSEY

TUBE DESIGN

by Claude L. Alexander
GENERAL SALES MANAGER
SUN TUBE CORPORATION



Whose responsibility is it to create the best tube design? Certainly the supplier must furnish a tube geared to the packager's specific needs. On the other hand, packagers have an obligation to themselves and consumers to make certain that their special needs and problems are fully understood by the supplier. They can then find out whether the supplier has the will and the means to produce the desired results.

In this two-way responsibility for good tube design, creative thinking is the key to the supplier's role. His design approach is guided by an understanding of four basic packaging needs:

1. **The Use and Distribution of The Product:** A tube suited to the product, knowledge of how the product will be applied and the type of customer who will use it.
2. **Economy:** A package which meets all the requirements at the least cost in time and money.
3. **Design Facilities:** Modern design and production facilities to plan and execute advanced tube designs.
4. **Character:** A tube whose "eye appeal" is both distinctive and in keeping with the particular quality of the product.

The supplier who fulfills these needs, offers a concept of service which goes beyond punctual deliveries. He considers his company an integral part of the packager's organization. In many instances, a supplier who practices this complete service, contributes much toward the marketing of a new product or an existing product in a new market.

Let's take the matter of creating a tube consistent with the purpose and distribution of a product. It is a well-known fact that what may be the right kind of tube for one product, may not be right for another. Moreover, a product when intended for two different kinds of distribution, may require two different types of tubes.

This fact was brought home to Johnson & Johnson when it was increasing the distribution of its sterile lubricant, K-Y Jelly.

The product was already being sold nationally in drug stores. But, Johnson & Johnson wanted to make it particularly attractive to doctors for hospital and office use. The company recognized that the large size of the existing tube made it unsuitable for distribution to doctors and hospitals. A new one-application tube was needed which could be used a single time and then discarded. This would guarantee sterile jelly with each application.

Johnson & Johnson met with Sun Tube design experts to discuss the problem. These talks resulted in the development of a distinctive tube containing a single application of sterile K-Y Lubrication Jelly.

The unique feature was a "break-off" top. It was designed to allow the doctor to flick off the top with one hand. The top also was constructed to avoid the possibility that sharp edges would rip through the doctor's gloves. In addition, the new package eliminated the office clutter caused by larger, partially used tubes.

Only Continental GIVES YOU AN EXCLUSIVE LINE OF SIX DOME-TOPPED AEROSOLS

WITH SALES OF AEROSOLS expected to hit 600,000,000 by 1960 (about twice 1956 production), you can see the immediate expansion that lies ahead for every aerosol user. Of all suppliers, Continental is best equipped to meet your growing demands, for two reasons. First, Continental offers the most complete line of aerosol sizes. Second, Continental has greatly increased aerosol production facilities. We're ready to deliver all the aerosols you need, any size, any time, anywhere, from plants across the U.S.

Whatever your product—insecticide or shaving cream, air freshener or hair lacquer—Continental aerosols are tailor-made for you, lithographed with your design by Continental craftsmen. Engineering and research services are also available, as well as introductions to valve suppliers and commercial fillers. You can fill all your container needs *with one order* to save on shipping and handling costs.

QUALITY Continental SERVICE

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

Cash in on the huge demand for AEROSOLS... call Continental TODAY!

Stamping press in the Sun Tube foundry

All these properties were built into the tube. There are many other instances where tube design can be adapted to the specific end use and distribution of products. Johnson & Johnson's experience suggests how important it is for packagers to take a new look at these possibilities.

The question of economy is another key factor in tube design. The alert supplier constantly seeks to reduce costs wherever possible—and sometimes these costs are found right in the basic design of the tube.

The experience of one company serves as a good example of how to reconcile economy with design. For some time, this company's shaving cream tubes had been lacquered to protect the printing. The tubes came into contact with soaps and moist air in the bathroom. These had a corrosive effect on the tube exterior.

However, the application of the lacquer added to the over-all tube cost. It also lengthened the production process. Sun Tube engineers examined the possibility of eliminating the lacquer and replacing it with a new kind of coating.

They came up with a new decorating material which stood up well in contact with the product, soaps and moist air. Pilot runs of the new lacquerless tubes were completed. Next, came severe laboratory tests conducted both by Sun Tube and the customer. After quality control specialists of both companies compared notes, they concluded that the new printing material did meet all performance requirements. Full production was ordered.

In this case, applied research resulted in an annual savings of more than $25,000 to the customer. Similar economies are sometimes possible if a strong effort is made to find them.

Of the many different elements that contribute to the over-all effectiveness of a tube, packagers know the special importance of eye appeal. Good tube design "pre-merchandises" the tube. A decorated shoulder or a new cap may be just what is needed to add that certain distinctiveness to a package

Yet, packagers are sometimes wary of making changes suggested by their suppliers. The reasons vary: The packager may feel that the switch to a new tube design will be a long and difficult process; or he may feel that there's too much risk of a production tie-up during the transition period.

At this point, the alert tube supplier can bring into play one of his most important resources—his design and production facilities.

Some time ago, for example, the J. B. Williams Company planned to modernize its complete line of shaving cream tubes. Williams wanted a new cap design in addition to other changes. But, the company wanted the assurance that the changeover period would not be lengthy or costly.

Sun Tube discussed the problem with Williams' executives. Williams was assured that the major changes could be handled in a matter of seven weeks.

A Sun Tube task force immediately went to work. Within one day, Sun Tube engineers produced a working drawing for a new and distinctive tube cap. Shoulder coating for the new tubes was also recommended. After getting approval of the cap drawing, sample tubes bearing the new cap were produced in three days. These met the customer's new specification completely.

The order was given to produce the newly designed tubes and two new cap molds. Full production of the new line was achieved within a few weeks.

The Williams Company's experience shows that change-overs can be speedily executed when adequate design and production facilities are available. Such facilities are a "must" for the supplier who claims to offer complete service. A tube design will only be as good as the supplier behind it, and the supplier's worth must be measured in terms of what he can offer the customer.

But if we want a complete picture of the responsibility for good tube design, we should examine the role the packager must play. Only an active role can bring top results. It is up to the packager to check his suppliers' design and production facilities and his desire to offer complete service. The true test of service is the degree to which the supplier is willing to work with his customer in solving problems.

Sun Tube has found that this policy pays off in its search for distinctive new tube designs, it has

(Continued on page 855)

Packaging and Selling

Perfumed Rice

We are always happy to report in this department a discovery by a member of this industry which brings added enjoyment to the life of our people.

Since this is a monthly magazine, at the time this issue appears many of our readers will have heard of "Perfumed Rice."

Our good friend Charlie Granville of Angelique Perfumes has just this minute called us up to tell us about the enthusiastic initial reception he had been receiving for their new product "White Satin Perfumed Wedding Rice."

It seems that polished rice has a rather remarkable absorption quality for perfume oils and that when the rice kernel has absorbed this perfume it is returned to the air over a very long period, making the rice kernel a sachet product of rather remarkable endurance qualities.

It seems natural to us that the general reaction of the beauty editors around the country should be bubbling enthusiam. Rice and weddings are not only very dear to the feminine heart, but they strike a chord of essential necessity that a woman probably understands much better than a man.

It is also not surprising that the leading department stores who have seen this product should be interested and very cooperative because to them this product must mean not only a new quality in their department which will help interrupt some of the traffic that constantly flows by, but this is a fragrance product which adds a certain plus to their department but yet does not in any sense bring a minus sign to any of the fragrance business which they now have.

In addition, alert stores will find a number of very interesting promotional ideas in this new product.

White Satin Perfumed Rice is packaged in a "Rice Sachet Keepsake" to retail for $1.50, in a "7 Ounce Wedding Package" to retail for $2.00 and in a combination package of "12 boxes of Rice Sachet" as a gift package for $5.00.

We have seen on a few previous occasions that a new method of dispensing fragrance holds great promise both for stimulating fragrance sales with current users and for broadening the market. We recognize perfumed rice as a definitely new method of fragrance dispensing and one in which we are quite content to go on record as promising a new and broader market for fragrance.

Elusive Traffic

Ever since the grocery supermarket began stocking the products of this industry, we have been told repeatedly that the overwhelming advantage of the supermarket was the enormous flow of traffic characteristic of this kind of retailing. It seemed to anybody who walked into a supermarket that this must indeed be the case.

There might have been a timid hint here and there suggesting that the supermarket was not always so crowded except on Saturdays and two nights a week. It might also have been suggested that the supermarkets, themselves, in insisting that the products they carry should have a quick rate of turnover and have the characteristic of quick consumption, was based upon the fact that their traffic, while apparently dense, really consisted of the repeated visits of a fairly limited number of people.

Nevertheless, we have been repeatedly told by experts in the merchandising field, and this has appeared many times in print, that the traffic of supermarkets was from four to five times greater than that of any drug store.

It remains for the merchandising executive of an advertising agency, that is John G. Poulos of Kenyon & Eckhardt, Inc. of New York and a former editor of Chain Store Age, to tear this basic marketing conception to pieces.

We admit to being fascinated by this analysis and are not sure yet how far we can go with Mr. Poulos. Nevertheless, we do think that he is at least partly and substantially right and we also think that he has come up with a very startling idea and a very challenging one for the retail druggist.

Mr. Poulos developed this idea in a speech at the Mid-Winter Conference Massachusetts State Pharmaceutical Association. We quote here from that part of his speech which so intrigued us.

"There is one basic misconception in the drug industry that is responsible for many of the present merchandising weaknesses of the modern drug store.

"All drug store owners are concerned with store traffic, and correctly so, for traffic represents one of the basic ingredients for building sales.

"Have you any idea how much traffic you have? How it compares in size with the traffic of the supermarkets?

"If you discovered that you had as much traffic as your supermarket neighbor, would you change any of

your present habits in buying, displaying, merchandising? Would you apply some of the modern merchandising know-how of featuring only the products that the customers want, instead of carrying thousands of brands under the old theory that a drug store must carry every brand under the sun to attract an isolated customer—"For we need him so much!"

"About a year ago, I was visiting with a drug store owner in Virginia who pointed out that his $200,000 volume store had more traffic than the $700,000 annual volume supermarket next door.

"Having grown up on the slogan that a customer visits a food store three times for every one time she visits a drug store—I sought for the holes in his claim.

"But there were no holes.

"He was right.

"The average customer in this Virginia drug store was spending 50 cents on each visit. This meant that the drug store had 400,000 customer visits each year. The supermarket next door was at the national average of $4.25 per customer, which meant 164,706 customer visits annually.

"Since that time, and in preparation for this talk, we have checked the traffic of drug stores and their food store neighbors in a dozen cities.

"In one test, we chose a large drug store in Indiana with an annual volume of $650,000. It was a self service store and had an average sale of 95 cents per customer. The high average sale per customer was the reason this store was used in the test. We wanted to find out what happens to the customer-count relationship of drug store vs. supermarket-neighbor when a drug store has a high sales average.

"The supermarket neighbor of this drug store was a big one and enjoyed an annual volume of $1,6000,000.

"After a ten-day count, the study showed that the supermarket had 950 customers a day, and the drug store had 1,300 a day.

"The best way to indicate what these figures mean is to describe what the drug store owner did with them.

"He developed large charts to show to his employees who had been impressed by the tremendous volume of the supermarket. It was pointed out that the drug store had 50 per cent more traffic than the supermarket—traffic to buy more goods. It was sales the store needed not more traffic. . . more sales out of the present traffic moving in and out of the store.

"The charts also showed the customer coming into the drug store only once a week, and to the supermarket three times a week.

"This meant that the drug store had more different customers per week in its traffic than the supermarket, which not only had a smaller traffic count, but a traffic count made up of the same persons coming in three times a week. This is a very important point; for it meant that the drug store displays were seen by three or more persons for each person who saw the supermarket displays.

"Drug store owners when informed of these traffic counts found it difficult to accept the validity of the conclusions—just as you are finding it difficult to believe right now.

"Many of these operators clocked the customer-traffic of their food store neighbors only to find that the food store had no more traffic and often had less traffic than the drug store.

"Let us dwell on this subject of traffic-count for a little longer, for far more hinges on it than meets the naked eye.

"Let us analyze your own stores and those of your supermarket neighbors.

"The drug stores represented in this conference-room range in annual volume from $80,000 to $650,000.

"By choosing a drug store of $100,000 annual volume for our example we can make our point with more dramatic effect.

"If you operate a $100,000 drug store (certainly that is not big volume) and your supermarket neighbor has an annual volume of less than $850,000—YOU HAVE MORE TRAFFIC THAN HE HAS!

"Work out this formula according to your own volume, and to your own average sale. . . Find out the volume of your supermarket neighbor and use the national average of $4.25 to obtain his traffic count.

"You will be amazed!

"When the drug store owner weighs this one point of traffic count carefully and realizes that he had almost as many or more customers than his food store neighbor—half the battle is won. But only if the logic of the conclusion is translated into action."

Tops in Advertising

Parke-Davis has received an award for "distinguished advertising in the public interest". For the past year and a half Parke-Davis has been sponsoring an advertisement on the theme "prompt and proper care may well turn out to be one of the biggest bargains of your life".

More than 300 advertising campaigns in general magazines were screened by 38 judges, including educators, editors, advertising and public relations executives. The award was made by the national weekly magazine The Saturday Review.

Changing Cosmetic Distribution

The 1957 Consumer Analysis of the Seattle Times has just arrived in our office. As usual, these admirable consumer surveys, as represented by this newspaper, gives a current and a continuing picture of some important things that are happening in the industry.

For instance, this industry is deeply interested in the kind of retail store where consumers are buying their cosmetics. Since the available distribution for this industry is so much larger than the requirements of the industry and since this distribution is divided among several groups of aggressively competing stores, there are bound to be constant changes here which will have varying effects on different manufacturers.

For instance, it is highly significant that a recent annual report of a cosmetic company explained its loss in sales by the fact that it was traditionally and primarily distributed through variety stores, a group of retailers which have been suffering competitive losses in cosmetic volume.

As has been the case in major cities during recent years, grocery stores have continued to increase their dynamic growth in the sale of toilet preparations. In this particular survey in the Seattle market, in 1953

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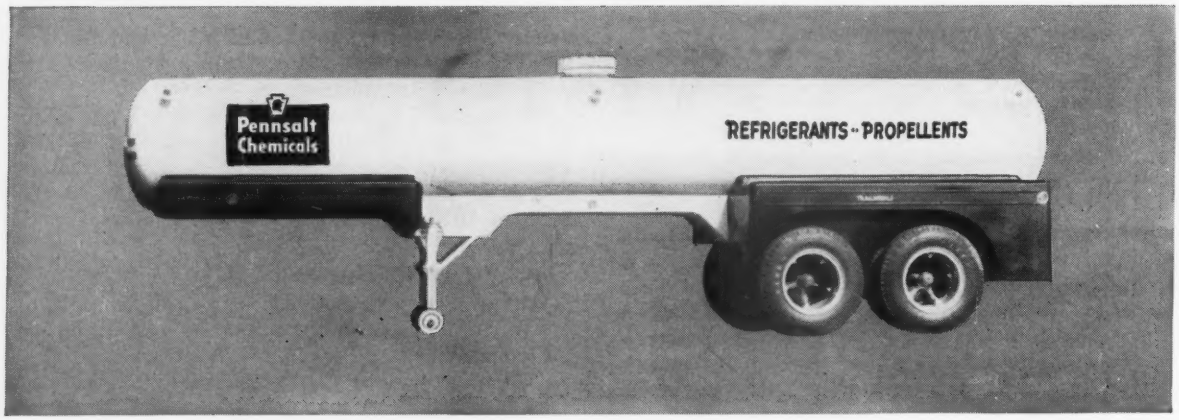

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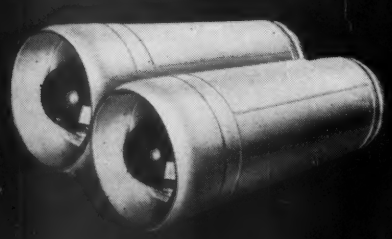

only 3.7 per cent of the families here bought toilet articles in grocery stores. Now in 1957 the number is 16.2 per cent.

House to house sales show a small increase. This has been progressively higher by about 10 per cent since 1953. Perhaps it is significant, however, that in 1956 6.5 per cent of the consumers bought house to to house and in 1957 a slight increase to 6.6 per cent.

Department stores have showed a consistent loss of business to other retailers, that is a drop from 34.9 per cent in 1953 to 30.7 per cent in 1956 and 28.4 per cent in 1957.

Drug stores, both independent and chain, are pretty well holding their own with a slight loss in the independents and almost complete stability for the chains.

The 5 & 10c variety stores have been consistent losers from 8.4 per cent in 1953 to 7.0 per cent in 1956 and to 6 per cent in 1957.

Perhaps these statistics should be judged in the light of what is happening in the industry. From a distribution viewpoint the most significant trend in the cosmetic industry is toward the mass presentation to the public through mass advertising of many cosmetics as purely utility products rather than fashion or glamour products. This trend from fashion and glamor to mass utility would obviously mean that the great growth of the industry has been in these products, and that drug chains and grocery stores would be in a preferential position.

Because of the growth of the industry, the department store might be slipping in its percentage-wise distribution of all industry products and, yet, may easily show a favorable and consistent growth in its own sales record.

Pollen Again

In our April department we reported that a new cream, that is Orlane's "Symphonie Pollen of Orchid" had been introduced into several leading department stores. This, we commented, was the first time that pollen or an extract from pollen had been used in the cosmetic industry. Now we discover from one of the leading suppliers of the royal jelly of the bee that the American Beekeeping Industry can furnish all the pollen the cosmetic industry wants on fairly short notice. We reprint this letter from R. B. Willson, Inc., 250 Park Avenue, New York 17, N. Y.

"We have had contact with you from time to time in recent years on the subject of Royal Jelly."

"In the April 1957 issue of "Drug and Cosmetic Industry," the Packaging and Selling section, is a story about a new product that has been brought out made with the pollen of a certain species of Orchids claiming that this "yields more body building elements than any other vegetable substance ever known". We wish to state that where is absolutely no comparison in the quantity of pollen that may be gathered from a limited species of orchids to the thousands of pounds of Royal Jelly that are being produced for the cosmetics industry. Nevertheless, although pollen in general is not being produced in the United States commercially today, it can be produced in enormous quantities, in much greater volume than Royal Jelly and far cheaper than Royal Jelly."

"The purpose of this letter, therefore, is to let you know that should an interest develop within the cosmetics industry for the use of pollen, that the American Beekeeping Industry can furnish it and on fairly short notice."

"American pollens vary from white to deep purple and black, but if only light colored pollens are necessary same can be secured."

Multiple Packages

Among the favorite devices used by this industry to meet the constant pressure to produce something new, is the change in the size of the package.

In order to get some kind of recognition for a promotion in retail stores and something new and different to stop traffic at the point of sale, we have had in this industry some pretty interesting and ingenious packaging changes.

Ciro, in their clever package "Perfume Originals," introduced a new presentation of the miniature size package which started a flood of imitations. Now we have an epidemic of the jumbo size appearing in such things as cologne.

There is nothing new about the multiple package, either in this trade or in any other industry selling packaged products. It is true, however, that in the last few years in the food industry, particularly beer, soft drinks, soups and similar products, there has been a tremendous increase in the marketing of multiple packages.

These multiple packages have not only been used for an assortment of a single company's diffierent brands, but there appears to be a trend toward marketing of multiple packages between cooperating companies who produce associated products.

According to a recent article in Printers' Ink, there are nine basic reasons or values why multiple packaging can pay. Here they are:

1. Introduce a new product.
2. Act as point-of-purchase advertising.
3. Change consumer ideas about a product.
4. Stimulate more mass display.
5. Take the place of print advertising.
6. Tie in with an established advertising campaign.
7. Improve relations with wholesalers.
8. Save price marking and stocking time for retailers.
9. Sell more of an already popular product.

Expanding A&P

As a probable indication of the expansion of health and beauty products in A&P stores, this huge chain has variously reported on working out a plan for direct buying.

Direct buying has already taken place in several midwest stores where the switch from rack jobbers is being evaluated.

Among trade circles it is considered logical that this big chain should take these steps because health and beauty aids or at least those in which the chain would be interested, are all well known brands on which returns are practically nonexistent. In addition, the A&P is interested in selecting those

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products which proved to be the fast movers in their own particular stores.

Not without particular significance for this trade is the report also that advertising contracts, which are difficult to make through the intermediary of a rack jobber, are a very important consideration in planning this move

New Lipstick Designs

Three catalogs showing new lipstick containers are now being distributed to the trade by the Scovill Manufacturing Company. Featured here are interchangeable parts for both swivel and refillable lipstick containers.

The new Scovill line is so designed as to permit production of exclusive designs for any cosmetic manufacturer in a wide range of materials and finishes and with a minimum of tooling expense.

According to W. H. Harris, Scovill's Cosmetic Container Sales Manager, it is now possible for Scovill to produce exclusive designs for any cosmetic distributor for less than 10 per cent of the tooling cost of former years.

Complete Catalogue

A new catalog from W. Braun & Co. has just come to our desk. This is one of the most complete packaging catalogs we have ever seen. A unique feature is that it has no formal index. All containers, glass and plastic, are listed according to size, with a drawing of the bottle and specifications. There is a cross reference indicating other sizes and this cross reference refers back to the display section which shows the bottles in perspective. This catalog is useful in showing the variety, the scope and the style of a great many glass containers.

New Products

We have commented many times here on the fact that a primary problem in business competition today is the endless flood of new products flowing into distribution.

It seems probable that this huge flood of new products each year will multiply rather than decrease because every survey shows an eagerness on the part of retailers and an equal eagerness on the part of consumers for something always new.

In an address at the recent annual meeting, the president of General Foods, Corp. has this to say about new products, "General Foods is investing more facilities, more manpower, more funds and more concentrated attention upon new products today than ever before." However, he warned, "Normally it takes one to four years of promotion of a new product to show a profit—sometimes even longer. It is not an uncommon experience to find that a new product which has shown real promise in a costly market test has to be abandoned because it fails to attract sufficient repeat sales." That little word 'abandoned' should be a key word in American marketing today. This endless piling up of unwanted products, temporarily sustained by the manufacturer's paid demonstration system or by PM's or by high pressure promotion and an advertising campaign is a dangerous and costly burden hanging over this market.

According to the president of General Foods, "The average grocery chain headquarters has 150 to 200 new items offered to it each week, or from 7,500 to 10,000 new items in a single year, although the average supermarket now carries only about 5,000 separate grocery products altogether." He quoted the head buyer of an important grocery chain, who said that in the first four months of 1956 the chain took on 192 new items, but during the same period dropped to 158 others.

This situation in the food industry, which the president of this huge food company finds troublesome enough to discuss with his stockholders, is an equally serious problem of this industry. In many pharmaceuticals and in most toilet articles and cosmetics, retailers are literally overwhelmed with the multiplicity and duplication of products.

Just where this is leading us is difficult to say, although we foresee the day when there must be a much more serious revolt of retailers than is indicated by the comment of the buyer of this food chain.

There is some sympathy for manufacturers. Firstly, because their selling expenses are so high today that a single product or a limited number of products make it almost impossible to operate an adequate sales force. In addition, it must be admitted that a large part of consumer buying is predicated on the fact that something is new and not necessarily better.

The fact does remain, however, that the day of specialization seems to be passing and that everybody is stepping over into everybody else's territory.

The only hope seems to be that some day when things are not so lush, new products will not be born so freely and carelessly and may have to have some reasonable justification for their coming into existence.

The simple fact of justifying the existence of a new product would probably sweep 70 per cent of new products off the market.

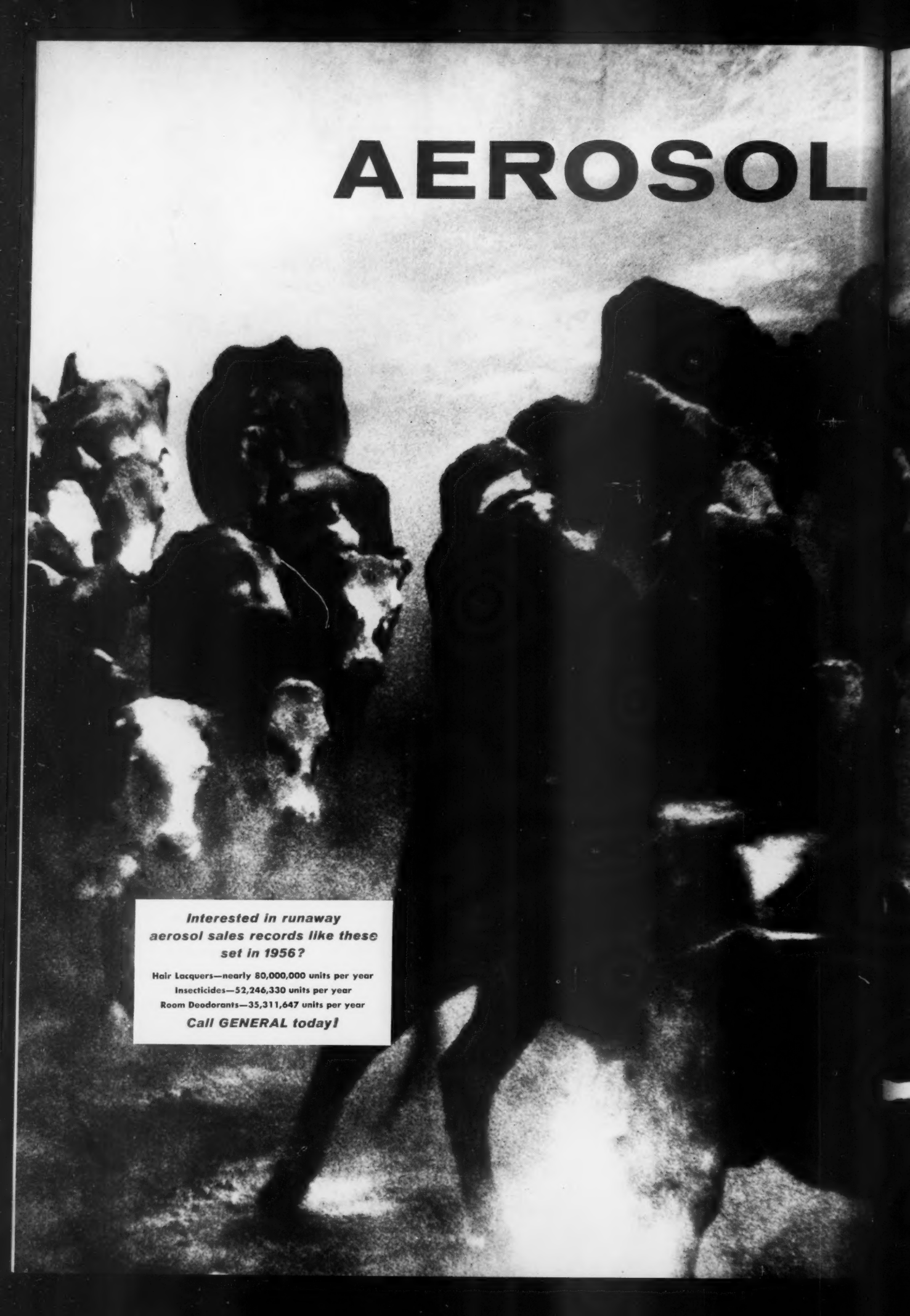
Change Cap Sizes

Here is a supermarket problem with bottled goods or aerosol cans which manufacturers ought to anticipate.

It is common supermarket practice to mark the price of these items on the top of the cap because it has been found that marking the price here can be done more rapidly and conveniently. An increasing number of people in the supermarkets have been switching caps—for instance, hair sprays are usually in size $.69, $1.25, $1.35, and $2.00. Since these packages normally have the same size cap, the stores are discovering an increasing number of people are switching caps, that is, for instance, the $.69 cap on the $2.00 package.

Slipping Variety Stores

Various surveys, particularly the newspaper panels, have indicated a consistent decline in the importance of the variety or syndicate stores as a cosmetic retail outlet. Now we see that the president of Chemway Corporation attributes the decline in the sale of the Lady Esther division to the "diminishing importance" of these stores.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Interested in runaway aerosol sales records like these set in 1956?
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NEWS IN PACKAGING...

Abbott Packages Win Awards

Two Abbott Laboratories packages are in the current American Institute of Graphic Arts show at Freedom House, New York. Both are physicians' samples; one is Selsun, the other is Abbott's candy-flavored aspirin for children.

A new counter display carton for Abbott's vitamin-mineral preparation, Dayamineral, won the Folding Paper Box Association's first award for one and two-color letterpress design and printing. It also won a merit award in the Association's medicinal category.

Other Abbott packages were winners in the American Package Design Awards Competition of the Package Designers Council. The Council gave a certificate of Merit to a box, label and glass apothecary jar being tested by Abbott for the company's high-potency vitamin, Optilets, and the firm's daily vitamin preparation, Dayalets. A second award-winning Abbott package was a sample mailer for Placidyl, a non-barbiturate sedative. A third citation from the Council went to a sample mailer of Abbott's complete vitamin line.

Mina Joins Lodes Consultants

Dr. Francis A. Mina has been appointed technical director of Lodes Aerosol Consultants, Inc., according to Frederick G. Lodes, president. Dr. Mina was formerly vice-president and general manager of the E. A. Bromund Company.

To emphasize that Rhulicream and Rhulispray are the same product but offered with different methods of application, Lederle Laboratories is packaging both the tubes and aerosols in a family of display cartons featuring one printed design. The cartons are printed bright blue and yellow with a band of a third color to distinguish the two methods of application.

S. B. DeMerell, left, vice-president of Anchor Hocking Glass Corporation and retiring president of the Glass Container Manufacturers Institute, Inc., hands the gavel to Edmund F. Ball, president and chairman of the board of Ball Brothers Company, Inc., who was elected president of GCMI at the Institute's recent semi-annual membership meeting at The Greenbrier, White Sulphur Springs, W. Va.

WILLIAM HEFFRON

Chief Chemist of Barr NY Plant

William Heffron has been named chief chemist for the New York plant of G. Barr and Company, according to Rud Saacke, plant manager.

O-I Promotes Miller

Robert F. Miller has been promoted to assistant sales manager of drug and chemcial industries for the Glass Container division of Owens-Illinois Glass Co., according to W. M. Robertson, drug and chemical sales manager.

With Owens-Ollinois since 1941, Mr. Miller held sales posts in the Boston and New York branch offices before his 1953 promotion to manager of the prescription ware and pharmaceutical and proprietary divisions in the company's general offices.

Package Research Conference

"Too long, too many packages have been designed on the theory that the louder you shout, the more you will sell. Packages should do just one thing—get across to the public instantly an unmistakable image of what the public expects of the product inside. The job of package research, and the aim of this conference, is to seek out those hidden appeals." So declared J. Gordon Lippincott, partner in the industrial design firm of Lippincott and Margulies, at the opening session of the First Annual Package Research Conference, sponsored by his firm and held May 21 and 22 at New York's Hotel Plaza.

Focal point of the opening session was the application to packaging of the latest studies in behavior and perception research. The May 22 session was devoted to a practical evaluation of the package as a communication symbol and to an analysis of the experimental methods for predicting package success.

Kimble Glass Appoints

K. G. Hewitt has been named manager of trade relations for the Blown and Tubular Products Division of Kimble Glass Company, according to S. A. Kenworthy, vice-president and general manager who also announced the appointment of G. A. Mounier, formerly manager of the product and price development department, to succeed Mr. Hewitt as sales manager of the container and accessories department.

White polyethylene caps which snap open with a pressure of the thumb and provide a tight reseal are now featured with the line of Plastainer Vials produced by the Prescription Ware Division of Owens-Illinois Glass Co. Professional in appearance, Snap-Caps are designed to combine maximum protection with consumer convenience. Polystyrene vials, suitable for capsules, tablets and pills, are available in five sizes, including SP-13, SP-9, SP-7, SP-5 and SP-3 shown in the photograph below.

Patent thoughts and trends

by Thomas Cifelli, Jr., PATENT ATTORNEY*

ARE MORE SMELLY PATENTS IN THE WIND?

Purists of all kinds will doubtless look with disfavor on the title of this article—and with justification. The legal purist will tell us that a patent is an intangible, legal right and therefore cannot have any physical attribute such as an odor. A purist in the use of language will doubtless tell us that even if we are referring to the copies of printed patents the title is wrong because these have no characteristic odor but are just like other printed matter and therefore the term is inapt. However, if the title has succeeded in telling the reader that this article will relate to patents dealing with things that have odors the title will have gotten across the main point. Furthermore, one must not forget that articles on patents do not lend themselves to the eye-catching techniques which abound in this and other publications and if the title helps in this connection as a lure it will have served its purpose.

It is realized that in order to lay a proper groundwork for the reader to answer the question given in the title a history of the development of research and patenting in the area which we may call the odor field, or cosmetics, if you will, should be given by way of background. However, such a history would be beyond the scope of this article; and, further, it is believed that the average reader of This Journal is already familiar with the history in question. Suffice it to say, in the past the cosmetics industry has not been noteworthy for its scientific accomplishments. What accomplishments of that kind there have been have resulted from the efforts of a comparatively few factors in the industry. In recent years, however, a number of forces have been operating to alter this situation and there are signs in the wind that results are beginning to be realized.

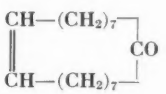
For our present purposes, we shall just call attention to the fact that within the last month or so several patents dealing with subject matter involving odor considerations have been issued by the U. S. Patent Office.

A closer look at some of these patents will now be taken.

Civetone Preparations

Anyone who has ever smelled civetone will, the purists to the contrary notwithstanding, agree that its designation as "smelly" is, if anything, an understatement. So, U. S. Patent 2,790,005, dealing with a process for preparing civetone and its homologs, seems to be as good a point as any with which to begin.

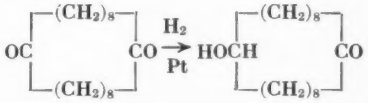
Civetone or 9-cycloheptadecen-1-one of the following structure



is a naturally occurring substance secreted by the civet cat. Due to its characteristic musk-like odor, it is of exceptional value to the perfume industry as a perfume base and fixative. Homologs of civetone having from 14 to 18 ring members also possess a musk-like odor very similar to that of the naturally occurring civetone. Although there are described in "Chemistry of Carbon Compounds," E. H. Rodd, ed., New York, Elsevier Publishing Company, 1953, volume II, part A, pages 277-284, several syntheses for the perfumery fixative civetone, little attention has been given to the synthesis of civetone homologs such as 7-cyclotetradecen-1-one, 8-cyclohexadecen-1-one and 9-cyclooctadecen-1-one. One method for producing these civetone homologs, described in Swiss Patent 135,921 (1928) and U. S. Patent 1,873,154, involves the pyrolysis of the appropriate dibasic acids. This method is not particularly attractive as the yields of the macrocyclic monoketones are quite low and the syntheses of the requisite unsaturated dibasic acids are lengthy.

The present invention is directed to the production of macrocyclic monoketones in good yields from symmetrical macrocyclic diketones. The process of the present invention comprises partially reducing a symmetrical macrocyclic diketone to the corresponding cyclic hydroxyketone and dehydrating the cyclic hydroxyketone obtained to the desired macrocyclic unsaturated mono- with a hexane-benzene mixture gave 0.23 gram of 10-hydroxycyclooctadecanone. Final elution with chloroform also gave 0.16 gram of 1,10-cyclooctadecanediol. After recrystallization from pentane, the cyclic hydroxyketone obtained had a melting point of 80°-81° C.

The above reaction proceeded as follows:

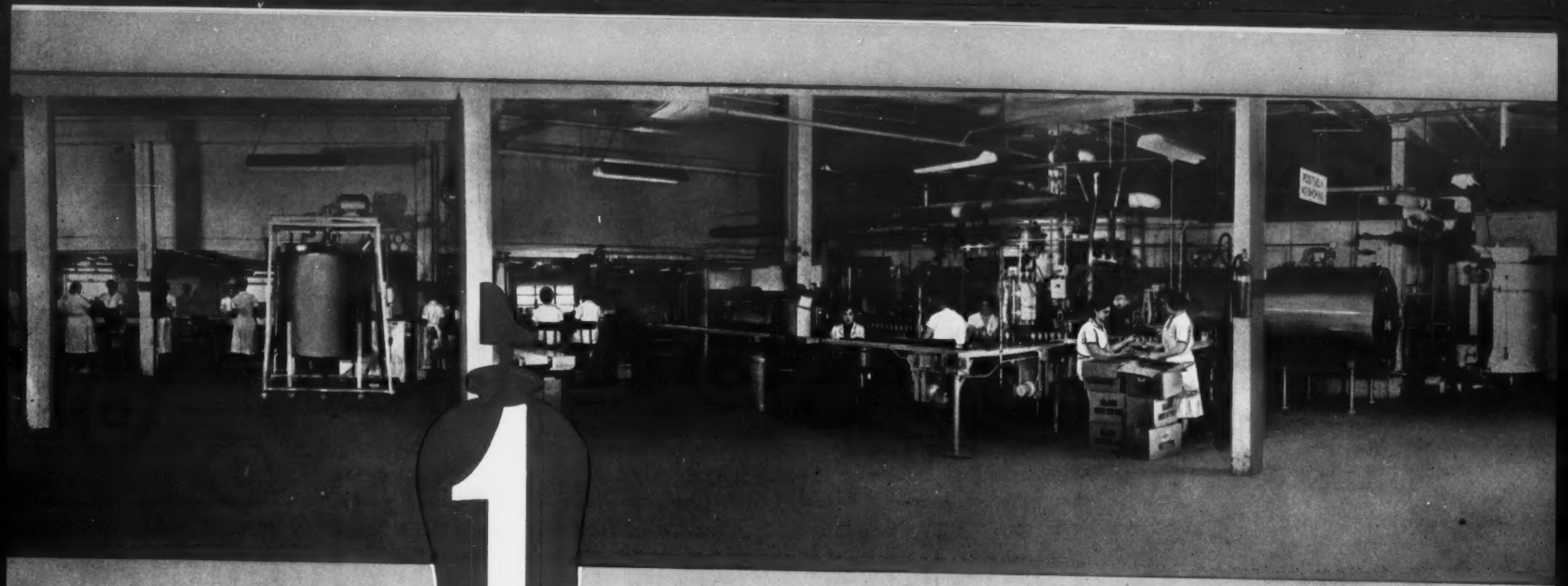


155 milligrams of 10-hydroxycyclooctadecanone were fused with 2 grams of potassium hydrogen sulfate using the procedure described in Example I. Crude 9-cyclooctadecen-1-one was obtained directly from the fused mixture by sublimation. After resublimation, 95 milligrams of 9-cyclooctadecen-1-one were obtained as a waxy solid with a melting point of 40°-41° C. This material had a musk odor similar to that of cyclooctadecanone. The total quantity of 9-cyclooctadecen-1-one obtained represented a yield of 66 percent.

A detailed example for illustrating the practice of the invention is given in the following example taken from the patent:

An acetic acid solution of 0.503 gram of 1,9-cyclohexadecanedione was hydrogenated in a semi-micro apparatus, using 70 milligrams of prereduced Adams catalyst (finely divided platinum produced by the reduction of platinum oxide), until about 104 percent of one equivalent of hydrogen had been

*Richards and Cifelli, Newark, New Jersey



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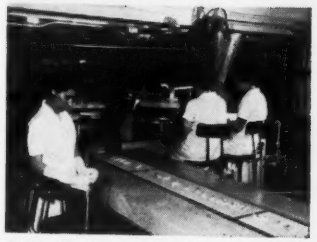

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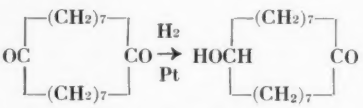
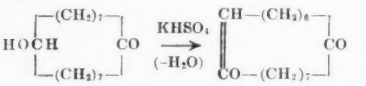
absorbed. After separation of the catalyst and removal of the acetic acid in vacuo, the residual solid was treated with about 60 milliliters of hexane at room temperature. There was obtained 0.07 gram of crude 1,9-cyclohexadecanediol which was insoluble in hexane. Cooling the filtered hexane solution to 0°-5°C. gave 0.22 gram of 9-hydroxycyclohexadecanone. The remaining hexane solution was then placed on on a magnesol-celite column. Elution with a pentane-benzene mixture gave 0.09 gram of the starting material, 1,9-cyclohexadecanedione. Elution with a chloroform-benzene mixture gave an additional 0.09 gram of 9-hydroxycyclohexadecanone as fine fluffy needles. After recrystallization, the cyclic hydroxyketone obtained had a melting point of 76°-77°C. The total quantity of 0.31 gram of 9-hydroxycyclohexadecanone produced represented a 61 percent yield.

The above reaction proceeded as follows:



A mixture of 170 milligrams of 9-hydroxycyclohexadecanone and 1.5 grams of potassium hydrogen sulfate was heated for about 5 minutes at about 250°C. The resulting mixture was cooled and extracted with pentane. Evaporation of the pentane solution gave a residual oil having an intense musk odor. On cooling, this liquid solidified. About 145 milligrams of 8-cyclohexadecen-1-one with a melting point of 17°-22°C. were obtained. This represented a yield of about 80 percent.

The above reaction proceeded as follows:



The patent was issued on an invention of A. T. Blomquist and J. Wolinsky, of Ithaca, New York.

Anti-Perspirant Compositions

From a patent dealing with a strong odor-giving substance to one dealing with the retardation of odor-giving products is a step we now take. U. S. Patent 2,790,747 was issued to Carter Products inventors on zirconium-containing anti-perspirant compositions.

The two inventors, Berger and Plechner, point out that they are interested in stopping or retarding the flow of perspiration and not merely in masking or destroying odors that result from perspiration. They also conceive that while the action of anti-perspirants is not fully understood it is known that they should possess certain properties such as water-solubility, non-irritation of the skin, and non-deterioration of clothing with which they come in contact.

The inventors assert that what they have done is essentially to use a combination of two zirconium salts, neither one of which is useful by itself, for the purposes indicated.

The three classes of zirconium salts are, first, the soluble inorganic acid salts, typical of which are zirconium sulfate, zirconium chloride, and zirconium oxychloride; second, the relatively soluble zirconium salts of hydroxy aliphatic carboxylic acids, typical of which are sodium zirconium lactate, sodium zirconium glycolate and sodium zirconium gluconate; and third, the relatively insoluble zirconium salts of hydroxy aliphatic carboxylic acids typical of which are zirconium lactate, zirconium glycolate and zirconium gluconate. The inorganic acid salts of zirconium, although quite soluble in water, produce solutions that are so highly acidic as to intensely irritate the skin and cause acid burns, and for this reason their perspiration inhibiting properties, if in fact they possess any, cannot be evaluated and they are useless for retarding and inhibiting perspiration flow.

Berger and Plechner have combined the salts of the second and third classes given above. The final composition should have a pH between about 2.5 to 5.5. A wide range of proportions as between the relatively soluble and the relatively insoluble organic zirconium salts may be employed.

The resulting compositions may be prepared in any desired form, including solutions, emulsions, creams and the like which include an aqueous carrier.

Hormone-Containing Cosmetic Preparations

Cosmetic compositions which are said to stimulate the growth of the epidermis and to lead to an increase in the layers of epidermis cells and to cell proliferation accompanied by an enlargement of nuclei and cytoplasm are covered by U. S. Patent 2,791,534 issued to Ciba Limited, of Switzerland.

The compositions in question contain from about 0.1 to 1.0 per cent of pregnenolone its benzyl ether and its esters with lower aliphatic carboxylic acids.

The following example taken from the patent given to illustrate the invention

The following substances are melted together on a water bath:

0.5 part of pure pregnenolone,
20.0 parts of stearic acid,
2.5 parts of almond oil, preserved,
0.8 part of cetyl alcohol, and
0.2 part of para-hydroxybenzoic acid methyl ester,

and the melt is heated until it has become clear and has reached a temperature of 80°C. There are also mixed together

1.8 parts of triethanolamine,
5.0 parts of glycerine and
69.2 parts of distilled water

and the mixture is heated to 80°C. The strained melt having a temperature of 80°C. is emulsified with the filtered aqueous solution having a temperature of 80°C., and the mixture is stirred until cold. At 40°C. there is added the necessary mixture of perfume oils. The mixture is then further stirred until it has cooled to 25°C. There is obtained a matt skin cream.

Controlled Halogen-Emitting Compositions

Trusler, an Ohio inventor, has obtained U. S. Patent 2,789,078 (assigned to Davies-Young Soap Co.) on an invention dealing with the slow, steady, controlled generation of halogen in compositions useful for disinfecting or sterlizing purposes.

Such compositions may be used in latrines, urinals or toilets, or they may be hung in closets, used in bleaching fabrics and the like, to provide chlorine water for chemical reactions, in the treatment of soil, etc.

Trusler points out that 1,3-dihalo-5, 5-dimethylhydantoin, while it is a stable solid under anhydrous conditions, decomposes rapidly in the presence of moisture, the rate of decomposition and halogen evolution preceding too rapidly to render the composition useful for practical purposes. By adding compatible, preferably non-reactive, water-insoluble organic solid which vaporizes at room temperature and function as a deodorant by masking unpleasant odors, Trusler has succeeded in slowing down the evolution of the halogen to practical rates. He gives as examples of the readily vaporizable substances which he uses as additives the following:

(*Continued on page 856*)

10 PRODUCTS...

with varied dispensing requirements

ALL SERVED BY ONE VALVE!

- Nos. 1, 2, 4 and 5 use dispenser fitments requiring no overcaps. Have OEL patented halfturn lock and unlock operating button, suitable for shaving creams, hand lotions, shampoos, coarse plant sprays, fire extinguishers, etc. Available also with greater flow for "fluffing" effect.
- Nos. 7, 8 and 10 feature cosmetic type dispenser button for glass, plastic and metal containers. Available for very fine, standard and three-phase dispensing: cosmetics, hair sprays, powders, etc.
- Nos. 3, 6 and 9 have standard dispenser button using protective overcap. Available for standard insecticides, room fresheners, products needing fine volume, heavy or wet discharges, such as paints, garden sprays and powders. Non-clogging, always dependable.
- For three-phase packages; provides mechanical particle break-up. Highly efficient on containers of water-based products and on packages using small amounts of propellent for maintained spray pressure.

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Any product, any application, the O E L "500" Series will satisfy your requirements with one standard valve.

This valve is simple and more dependable because of advanced engineering. It has these advantages:

(1) Designed for pressure or cold filling; can be loaded faster, more economically, with less propellent loss during pressure filling, than any other valve.

(2) Greater safety when using inflammable materials.

(3) More aesthetic appearance — with excellent dispensing control.

(4) Standard, regularly stocked dispenser fitments provide any desired result. Unlimited design opportunity for custom use.

REMEMBER — The O E L "500" will solve your dispensing problem with one valve. Your packaging will have added distinction with O E L's exclusive custom appearance.

Write for complete information TODAY!

OEL THE *BETTER* AEROSOL VALVE

OIL EQUIPMENT LABORATORIES, INC.

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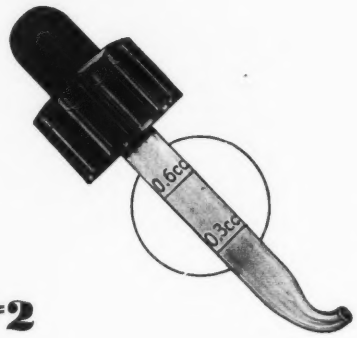
A BETTER DROPPING PART MAKES A BETTER PRODUCT

#1

To Be SURE Your Liquid Preparation Can Be Properly Dispensed

SPECIFY

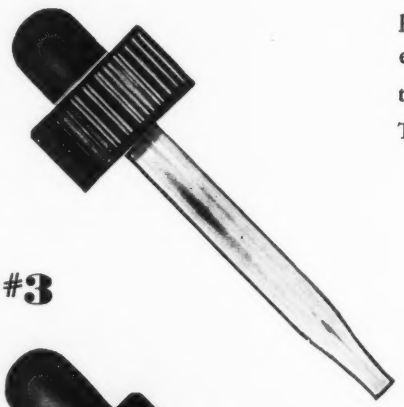
New Perfection DROPPING PARTS



#2

Many a fine product has been rejected by the public simply because some seemingly small detail was below standard. The dropping part can be such a detail—an apparently simple device, yet vital to the user's satisfaction.

Since 1931, when Pennsylvania Glass originated the screw-cap dropping part, we have specialized in this important dispensing unit. This advantage in experience and specialization has made NEW PERFECTION Dropping Parts everything their name implies. Longer experience and undivided attention to one product have resulted in superior quality and reliable performance. To be sure of the best — specify NEW PERFECTION Dropping Parts.



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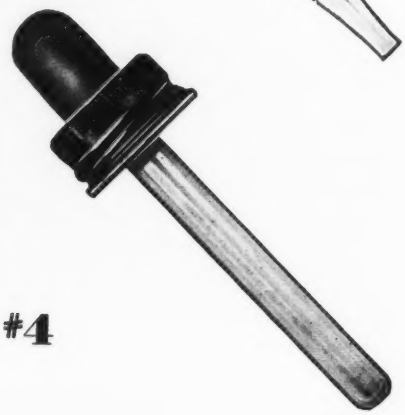

#4

We can supply various colors of bulbs in natural rubber or in our special oil-resisting Amekine compound, caps of plastic or metal in many sizes and colors, and various types of dropper glasses in any length with calibration in any color or plain. New Perfection dropping parts will fit your own bottles, or can be supplied in combination with our Modernistic bottles in Amber, Blue, Green or Clear glass. Sizes: ⅛, ¼, ½, 1 and 2 oz.

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NEWS...

ADMA Election

Dr. Ernest H. Volwiler, president of Abbott Laboratories, was reelected president of the American Drug Manufacturers Association at its recent annual meeting. Of the four vice-presidents of the association, John C. Leppart, E. R. Squibb & Sons; and Kenneth F. Valentine, Pitman-Moore Company; were reelected, and E. N. Beeseley, Eli Lilly and Company; and Leslie D. Harrop, The Upjohn Company; were newly elected. L. D. Barney, Hoffmann-La Roche, Inc., was elected treasurer. Reelected to three-year terms on the executive committee were Francis Boyer, Smith, Kline & French Laboratories; John T. Connor, Merck & Co; and S. Barksdale Penick Jr., S. B. Penick & Company. George R. Cain, Abbott Laboratories, was elected to a one-year term on the executive committee, filling out the term of Mr. Barney.

DR. ERNEST H. VOLWILER

The following continue as members of the executive committee: Theodore G. Klumpp, Winthrop Laboratories; W. G. Malcolm, Lederle Laboratories; Joseph Fistere, Mallinckrodt Chemical Works; H. J. Loynd, Parke, Davis & Company; George F. Smith, Johnson & Johnson; John G. Searle, G. D. Searle & Co; John S. Zinsser, Merck Sharp & Dohme; Robert Lincoln McNeil, McNeil Laboratories; Donald S. Gilmore, The Upjohn Company; Adam H. Fiske, Eli Lilly and Company; and J. H. Fitzgerald, Dunning, Hynson, Westcott & Dunning.

A. L. van Ameringen Marks 40th Year In the American Fragrance Industry

A. L. van Ameringen, chairman of the board of van Ameringen-Haebler, Inc., who celebrated his 40th anniversary in the American fragrance industry late last month, has not only built one of the largest and most outstanding establishments in the field of aromatic chemicals, perfume materials and flavors, but he has also made many contributions to the industry during these years. For example, some time back, Mr. van Ameringen delivered a twelve-part seminar at the College of Pharmacy, Columbia University, on the general subject of "Perfume—Its Evaluation and Appreciation." Having recently had the opportunity to examine the notes on which the seminar was based, we give some pertinent excerpts of interest.

A. L. VAN AMERINGEN

". . . . . When a man or a woman is asked what qualities he admires in a perfume on the opposite sex, the answers are vague, the lack of clarity striking, because the motivations for their responses are buried deep in their unconscious selves. Yet, upon unravelling these concealed motivations, one finds the twofold need to offer pleasant stimulus to oneself, to one's own senses, and to those of others, particularly from men to women, and vice versa.

" . . . . . When it is considered that ingredients present in a natural oil in a percentage so small that they have thus far defied the efforts of the world's scientists to analyze them and find them, can still be detected by the nose, it can be seen how potent is this stimulus, how powerful is the receptor.

" . . . . . The perfume manufacturer must never underestimate the power of the nose. No off-color, no matter how small, may be disregarded. More even than in color work, more than in appearance, degree of solidity, viscosity, greasiness, the need for consistency in odor is paramount. Consistency, in and of itself, is of little value; it must be linked with other qualities, that fulfill the basic requirements of a fragrance.

" . . . . . Memory is of unquestionable value to the perfumer, to those involved in the choice and evaluation of perfume, and it is important in considering the effect of perfume upon a consumer.

The second factor to consider is sensory discrimination, by which is meant the ability of the brain to differentiate between two presumably similar stimuli. Someone with highly developed sight discrimination for color will be able to determine which of two shades is the deeper, and the more this ability is

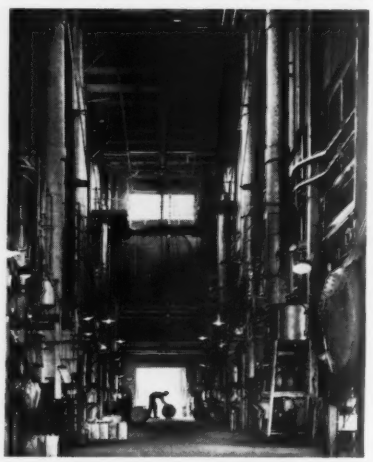
Abbott Branch Supervisors

Abbott Laboratories has promoted four to branch supervisor. William P. Chapin Jr. has been named supervisor at Jacksonville. Daniel D. Dooley succeeds Mr. Chapin as Minneapolis supervisor. Stanley E. Korn is supervisor at Los Angeles. Cleveland E. Montgomery has been named supervisor of the new branch at Baltimore.

Grove's Des Moines Salesman

Anthony Scarcello has been appointed salesman for the Des Moines territory of Grove Laboratories, Inc.

The newly enlarged distillation building at the van Ameringen-Haebler Union Beach aromatic chemicals research and manufacturing facility.



Creative perfumer seeking the increasingly complicated fragrances in demand today.

developed, the better will he be able to differentiate not only between diverse shades but even between the slightest variations in hues.

" . . . . . In odor work, this sense of discrimination is acute, but has not been tested as systematically as in other fields of endeavor. Nevertheless, it is well known that people detect differences so slight that the usual methods of chemical analysis will not succeed in finding these differences.

" . . . . . Although no good perfume should disappear immediately upon application, the lasting qualities must be different with the various notes or characters of a fragrance. A light perfume cannot last as long as a sweet one, and an oriental odor is usually more tenacious than the floral. But any perfume possessing a good odor life for five or six hours can be said to have satisfactory lasting power, and it has captured the fundamental and basic qualities of a good fragrance if it is pleasing to the discriminating user, and if it has diffusion, subtlety, strength, interesting character, and a continuity of its basic theme throughout the odor-life period. Surely, after a lapse of five to six hours, the American consumer can be trained to make a new application from a purse bottle, just as she would expect to have to reapply her lipstick and again powder her nose after such a lapse of time.

" . . . . . By far the largest consumer group is the one purchasing popular-priced perfumes. It is a group which does not establish the fashion, but which closely follows the fashion, as set by the upper level. A new perfume addressed to this group has the greatest chance of success when following the trend or the fashion set by a successful perfume of a more exclusive nature.

"Does this mean that it should be an imitation of such an odor? Not at all! It does mean, however, that just as the trend or fashion in millinery or dresses is followed, although not actually imitated, from one price level to another, so the popular-priced item should not disregard these trends in fragrances.

" . . . . . Because men and women use fragrance largely to appeal to the opposite sex, the odor types that they choose are those which essentially accentuate their own sex. For if, as seems quite evident, fragrance is one of the many attributes that enhance the attraction that draws men and women to each other, then one might expect a man to seek in the fragrance worn by the woman the very embodiment of delicacy, femininity and refinement that he is so anxious to find in other aspects of her life.

" . . . . . But it would be neither desirable nor possible to capture in the blend of an artist, and thence to imprison within the walls of a flacon, either the romance and mystery of woman, on the one hand, or, on the other, the odors that directly suggest the struggles of the sons of man.

"It is the art of the perfumer, starting from these precepts and concepts which are seldom consciously expressed, to translate, to concentrate, to concretize, and to refine, so that the crude becomes appealing, and the mataphysical real.

" . . . . . Aromatic and synthetic products have made modern perfumery possible. In the thousands of years since scents were first created by man, practically nothing of value had been added to the group of materials used by the perfumers, until the advent of aromatic chemicals. Some sixty years ago, when organic chemistry developed a few products which had a greater odor value, the first milestone in the creation of what we call modern perfumes was made. Progress since that time in the entire chemical industry has been amazing, and the public has been ready to accept the synthetic as a wholly new entity equal and often superior to the natural materials. This has been true in fabrics, medicinals and in many other fields as well."

On Norwich Medical Staff

Former health commissioner of Utica, N. Y., Dr. Paul J. Christenson has been appointed to the medical staff of Norwich Pharmacal Co.

Appointed by Colgate

C. G. Grace, vice-president and general manager of the Toilet Articles Division of Colgate-Palmolive Company, has announced five appointments within the marketing organization of the newly created division.

Marshall Ward has been named manager of market research. G. D. Miles has been appointed manager of packaging. Kenneth Arrington, Joseph Deimling and Richard Colgate have been named product managers.

Mr. Arrington will be in charge of Colgate Dental Cream, Colgate Chlorophyll Toothpaste and Colgate Tooth Powders, Mr. Deimling will be in charge of all Lustre-Creme Products. Mr. Colgate will be in charge of the Cashmere Bouquet line, the Palmolive Shave line, and Veto Deodorant.

The product managers, who report to Irvin W. Hoff, marketing manager, will be responsible for the advertising, media, sales promotion, packaging, pricing and in general, all those facets of marketing necessary to the movement of products to the consumer, with the exception of sales.

Yves-Rene Naves Returns

Dr. Yves-Rene Naves, director of Research of L. Givaudan & Cie., S.A., Vernier-Geneva, Switzerland, left the United States May 24 ending a two-week visit during which he met with the research and technical staff of Givaudan-Delawanna, Inc. Dr. Naves also reported on the research activities being conducted by the Givaudan organization abroad.

Dr. Norman W. Karr, right, receives a gift presented by Dr. Asger F. Langlykke, director of the Squibb Institute for Medical Research, on behalf of the staff of the research laboratories at a recent dinner party which marked milestones in the careers of both men—Dr. Karr's departure to serve as a major in the U. S. Army and Dr. Langlykke's tenth year with Squibb.

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MUSKS
There are no finer . . . Shulton nitro musks are rigidly controlled throughout manufacture to assure absolutely constant odor quality. Whether your application is for ambrette, ketone, or xylol, Shulton's years of experience in nitro musk manufacture can provide you with the very finest grade, for exacting perfumery requirements, or with technical grade, wherever this economy is feasible. And, remember, you can rely on their availability, for Shulton nitro musks are domestically made.
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Penick Buys Dow Aromatic Chemicals Compounding Dept.

S. B. Penick & Company has bought The Dow Chemical Company's Jersey City facilities, inventories and formulas for making aromatic blends, according to announcements by both companies. Penick will produce and market all aromatic blends formerly manufactured by Dow.

The present compounding and technical personnel will be retained by Penick. Under the terms of the agreement, Penick is purchasing from Dow the entire physical inventory of merchandise and equipment, formulas, trade names, trade-marks, and patents pertaining to the compounding division. Operations will continue at the current location in Jersey City for the present.

Discontinuing the compounding operations at Jersey City will enable Dow to give increased attention to aromatic chemicals development work, Donald Williams, Dow vice-president and director of sales, said. The company also expects to expand its marketing activities in this field, he added.

The transaction did not involve sale of real estate. Dow occupied the Jersey City location under lease.

Her Majesty Queen Juliana arriving for her April 25 visit to the Polak & Schwarz factories, Hilversum-Holland. Left to right: W. Thomassen, Mayor of Zaandam; Jankvrouwe W. A. Repelaar van Driel, Lady in Waiting; A. Schwarz, company director; C. C. Brummer, company director; Commander C. C. de Jong, Aide de Camp to Her Majesty.

W. H. Shields Retires

William H. Shields, assistant to the research director of Emery Industries, Inc., has announced his retirement. He has been with the firm 32 years.

U.S.I. Vice-Presidents

Robert H. Cornwell, Alden R. Ludlow Jr., Francis Olmsted and Dr. Stuart Schott have been named vice-presidents of U. S. Industrial Chemicals Co.

Berman Joins Lorni, Inc.

Louis Berman has joined Lorni, Inc., New York manufacturer of ornaments for cosmetic containers. He was formerly with Rich Art Mfg. Co.

Mrs. Tess Tinker Retires

Mrs. Tess Tinker, assistant to the president of Shulton, Inc., retired June 1, having been employed by the company since it was founded in 1933 by the late William L. Schultz. Secretary to Mr. Schultz for six years before he founded Shulton, she thus served the company and its founder for 30 years.

In the early days of the new company, she was corporate secretary and later was made assistant to the president. In 1938 she was placed in charge of the New York show rooms. She also supervised the operation of the company's private label soap business in recent years.

John E. McKeen, Pfizer president and board chairman, inspects Japanese scroll indicating tranquillity in front of a replica of a Japanese garden. The garden, part of the Pfizer-Roerig Medicade display at the A.M.A. Convention in New York was staffed by two young Japanese women. Shown here is Miss Akiko Kanda who is in the U. S. studying dancing.

Fairhurst Rejoins Verley

William S. Fairhurst has rejoined Albert Verley and Company as a sales representative, according to an announcement by Edward J. Strobel, president. Mr. Fairhurst started in the aromatic industry in 1933 as a Verley laboratory assistant. He left the company in 1937, and except for three and a half years service in the U. S. Army Chemical Corps, he has been continuously in the industry.

A charter member and former president of C. I. B. S., he has also served as secretary-treasurer of the Essential Oil Association, and has been active in the promotion of the industry. Mr. Fairhurst will work out of Verley's New York office.

a new star is born

"Acetulan"

A LIQUID DERIVATIVE OF PURE LANOLIN

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ACETULAN™ . . . a bright new star in the cosmetic firmament, brings unlimited possibilities for new effects in cosmetic and pharmaceutical formulation. ACETULAN is a water-thin liquid fraction of acetylated lanolin alcohols. It is chemically designed for aerosols but is a surefire hit in emulsions as well because of its penetration, emollience and solubility characteristics.

use ACETULAN because . . .

- it is an excellent plasticizer for films of PVP and waxes, making it ideal for use in aerosols without valve clogging.
- it stabilizes the viscosity of liquid emulsions . . . an unusual property.
- it is soluble in ethyl alcohol, and most oils including castor, mineral, vegetable and silicone.
- it imparts a soft waxy emollient afterfeel to the skin and hair and is an unusual penetrant.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

For complete detailed information on this remarkable product, write for your copy of our new ACETULAN booklet.

AMERICAN CHOLESTEROL PRODUCTS INC. AMERCHOL

American Cholesterol Products
INCORPORATED
AMERCHOL PARK EDISON, NEW JERSEY

NYQ Merged into Penick

New York Quinine & Chemical Works has been merged into S. B. Penick & Company and is now "New York Quinine & Chemical Works, Division of S. B. Penick & Company." As this change is intended only to simplify internal corporate structure, no change in operations is contemplated.

Correspondence, remittances, narcotic blanks, etc., need not be revised. It is not necessary to add "Division of S. B. Penick & Company" to any documents.

Olin Mathieson Adv. Director

Stanley W. Koenig has been promoted to director of advertising for Olin Mathieson Chemical Corporation, it has been announced by Thomas S. Nichols, chairman, and Stanley de J. Osborne, president. Mr. Koenig had been an assistant director of advertising.

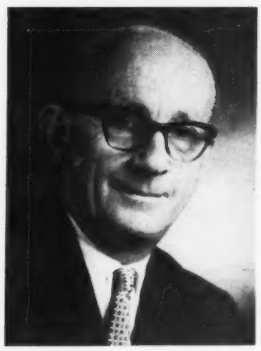
Joslin, Woodcock Switch Jobs

An exchange of assignments by R. M. Joslin and W. A. Woodcock has been announced by Union Carbide Chemicals Company, Division of Union Carbide Corporation. Mr. Joslin has assumed the duties of manager of the Fine Chemicals Department, Union Carbide Chemicals —a position formerly held by Mr. Woodcock. In turn, Mr. Woodcock has been appointed sales manager of Industrial Chemicals which was Mr. Joslin's previous assignment.

Barbier Visits New York

Following a four-week business and research trip to Argentina and Brazil, Dr. Andre Barbier, in charge of production and research for cosmetic basic materials for the Givaudan European organizations, arrived in New York last month to confer with executives of Givaudan-Delawanna, Inc.

While in New York, Dr. Barbier attended the meetings of the Toilet Goods Association and the American Society of Cosmetic Chemists.



DR. ANDRE BARBIER

George L. Schultz, president of Shulton, Inc., embarks for a brief vacation in the Carribean during which he also plans to visit Shulton sales offices and plants in Cuba, Venezuela, Puerto Rico and Mexico.

Dr. Guenther Is in Africa Surveying Essential Oils

Dr. Ernest Guenther, vice-president and technical director of Fritzsche Brothers, Inc., left May 16, on one of the most ambitious surveys of essential oil and spice production he has made in recent years.

Flying directly to the Belgian Congo, he began exploration by car of the essential oil producing sections around the great Belgian Congo Lake Region which includes Lake Alfred, Lake Kivu and others. Oils of eucalyptus, vetiver and lemongrass are produced there at the present time. From there he will fly to Madagascar and the Comoro Islands for an investigation of vanilla production, ylang ylang, sweet basil, lemongrass, etc.

While in Madagascar he will also visit the producing regions of clove and vanilla beans on the east coast. Reunion Island will be his next point of call, where a study of the production of vetiver, geranium and other essential oils will be undertaken. Completing his investigations here, he will fly to South Africa by way of Madagascar, visiting regions devoted to citrus oil production.

By the middle of August he expects to be in Zanzibar, for a survey of the clove industry. From there he plans to fly to Kenya and Tanganyika to study any new developments there and drive through the big game reserves. If conditions permit, Dr Guenther will visit equatorial West Africa for studies of ginger root, sweet orange oil, and others. He expects to be back in the United States, via Europe, in about five months.

Dr. Guenther is planning to take colored motion and still pictures, which will be shown later on to the trade in a series of lectures.

Heads Warner-Lambert Int'l

Appointment of Paul R. van der Stricht as president of Warner-Lambert International, overseas division of Warner-Lambert Pharmaceutical Company, has been announced by Alfred E. Driscoll, president of the company.

Prior to the war, Mr. van der Stricht was associated with the New York law firm of Davis Polk Wardwell Sunderland & Kiendl. He served in the U S. Army from 1942 to 1946, when he was separated with the rank of colonel. After several years of association with the chemical and antibiotic industry, Mr. van der Stricht joined the Warner-Lambert organization in 1953 as vice-president for European Operations.

Push-Button Niacinamide

A new modern plant which virtually produces the B vitamin niacinamide on a push-button basis has been erected in Danville, Pa., by Merck & Co., Inc., according to an announcement from the company. The plant is producing high purity niacinamide which is whiter in appearance and without the odor often considered characteristic. A new free-flowing form of niacinamide is also being offered, at no premium in price, to help end the frequently-encountered problem of caking, spokesmen for Merck declared.

Newport's Chicago Mgr.

Fred J. Stief has been appointed Chicago district manager of Newport Industries Company, a division of Heyden Newport Chemical Corporation, R. J. Spitz, vice-president of Newport Industries Company, has announced.

Hadacol President

Jerome S. Garland, formerly president of the d-Con Company, has been named president of Hadacol, Incorporated.

JEROME S. GARLAND

5 important reasons to buy

Baker { Sodium Hydroxide / Potassium Hydroxide

PELLETS

Extremely pure—essential for many processes.

Domestic Material—made by Baker men and methods.

Available in Tonnage—Baker is America's largest producer.

Economical—often saves steps in processing.

Convenient—free-flowing, easy to weigh, easy to pour.

Specify Baker caustic pellets, and you get more than an excellent product of highest purity—*You get the security of an assured, domestic supply direct from America's largest manufacturer.*

Other advantages: Baker's unequaled production facilities make it simple to order the most convenient, economical quantity for your operation. We can ship by the TON or Carload.

Baker production is geared to both quantity and quality. Baker Sodium Hydroxide and Potassium Hydroxide Pellets are white, extremely pure, low in heavy metals, chloride, carbonate, sulfate, phosphate, nitrogen and silica. The pellets are free-flowing, easy to pour, easy to weigh, easy to use. They'll simplify your handling operations, save you time and money.

Baker supplies Sodium Hydroxide Pellets and Potassium Hydroxide Pellets in Reagent and U.S.P. grades.

WRITE FOR PRICES AND SAMPLES: Address J. T. Baker Chemical Co., Executive Offices, Phillipsburg, N. J.

Baker Industrial Chemicals

"Purity by the ton"

Baker CHEMICAL

Duche Acquires Uni-Gum

T. M. Duche & Sons, Inc. has acquired the capital stock of Uni-Gum Corp. and will integrate the Uni-Gum operations into its own.

Uni-Gum Corp., since its organization in 1953, has become known as a supplier of agar agar and other natural and modified gums. It has consistently stressed technical service to customers and the development of new products for both food and industrial uses.

The associated firms will operate from the Duche office at 117 Hudson Street, New York 13, with the Uni-Gum Corp. factory and research laboratory continuing in its present location at 4808 Farragut Road, Brooklyn 3. The facilities of Uni-Gum Corp. will permit expansion of technical service to the pharmaceutical and cosmetic industries on gelling, thickening and suspending agents.

Parchois Becomes Consultant

Pierre Parchois, former perfumer for Coty, Inc., has announced his entrance into the field of perfume consulting, with headquarters in Paris, France. He intends to make frequent trips to the United States to maintain close contact with the toilet goods industry.

VERNON K. GALITZ

Chicago Rep. for Dragoco

Vernon K. Galitz has been appointed sales representative in the Chicago area for Dragoco, Inc. He has had more than seven years experience in sales of aromatics and flavor materials.

Factor, Sales, Earnings Up

Sales and earnings of Max Factor & Co., in the first quarter of 1957 were substantially higher than in the like period last year, Max Factor Jr., president, has announced. Net sales for the three months ended March 31 was $10,561,933, a 57 per cent increase. Net income was $788,830 as compared with $660,594 in 1956.

Dr. Leo Levi of the Canadian Food and Drug Directorate, left, who headed the Canadian research team which won the annual scientific award of the Cosmetic Industry Buyers & Suppliers Assn. accepts the award from George Kaempkes of Pacquin, Inc., center, president of the CIBS, during the recent meeting of the Toilet Goods Association. At right is Pierre Harang, vice-president of Houbigant Sales Corp., who was reelected president of the T.G.A. Title of the prize-winning paper: "The physico-chemical characterization of essential oil constituents and their derivatives by modern instrumentation techniques."

WALTER C. GAKENHEIMER

Gakenheimer Joins Stuart

Walter C. Gakenheimer has joined The Stuart Company as scientific assistant to the president, according to Arthur O. Hanisch, president. Dr. Gakenheimer was formerly associated with the Research and the Marketing Division of Merck & Co.

Hooker Dir. of Gen Devel.

Dr. Marion B. Geiger has been appointed director of general development of Hooker Electrochemical Co., it has been announced by Thomas E. Moffitt, executive vice-president.

Dr. Geiger has been general manager of Oldbury Products since the consolidation of Oldbury Electro-Chemical Co. into Hooker last November 30. Prior to that time, he had been executive vice-president since 1953 and a director of Oldbury since 1942.

Two Chemists Join Shulton

Jerome J. Ross, Ph.D., has been appointed research chemist at the central organic research laboratory of Shulton, Inc., and Calvin A. Edmunds has been engaged as a chemist in the analytical and control laboratory, according to an announcement by Dr. Charles Kline, scientific director.

Elected to Alcolac Board

Dr. Thomas H. Vaughn, executive vice-president in charge of corporate development of Pabst Brewing Company, has been elected to the board of directors, American Alcolac corporation.

Robertet, Taconic Relocate

P. Robertet, Inc. and Taconic Natural Oils Company, Inc. have announced the new location of their offices: 221 Fourth Avenue, New York 3. Telephone: ORegon 3-7585.

IRVING A. SCHLAKMAN

Joins Purdue Frederick

Irving A. Schlakman has been appointed products control manager of The Purdue Frederick Company, according to Benjamin Schneider, president. Mr. Schlakman will be responsible for production and inventory control of trade and sample units, as well as literature used by various home office departments. Also, he will coordinate the functions related to new products.

Mr. Schlakman was formerly associated with Stein, Hall & Co., Inc. where he served as pharmaceutical and cosmetic technical administrator.

Hooker New Eng. Office

George J. Bruyn, vice-president and manager of Marble-Nye Co., Worcester, Mass., has, in addition to his present duties, been appointed manager of New England district sales for Hooker Electro-chemical Co. Marble-Nye Co., has been a subsidiary of Hooker since 1953.

John S. Coey, Eastern sales manager, has announced that Hooker is establishing a separate New England office at 265 Grafton St., Worcester, Mass., the same address as Marble-Nye. Mr. Bruyn will continue to make this his headquarters.

Krueger Acquires Klinker

B. H. Krueger, Inc. has acquired the Klinker Manufacturing Co. of Cleveland, according to an announcement by Bob Jacobson, sales manager of Krueger. All manufacturing will be handled at Krueger's New York plant.

Andre Givaudan Leaves U. S.

Andre Givaudan left the United States May 18 ending his semi-annual visit. During his stay, he visited friends in the industry and attended the meetings of the Toilet Goods Association and the Society of Cosmetic Chemists.

Named to Cyanamid's Executive Committee

W. G. Malcolm, Ph.D., vice-president of American Cyanamid Company, has been named to the executive committee of the company's board of directors, it has been announced by Kenneth C. Towe, president.

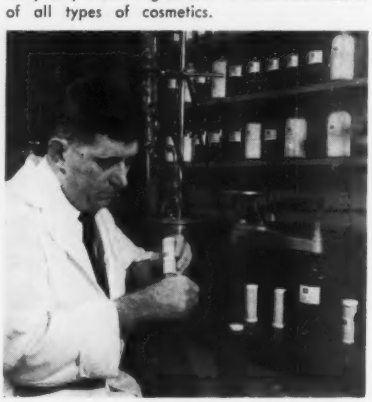
Dr. Malcolm served as general manager of Cyanamid's Lederle Laboratories Division during the period when Lederle became an important factor in the ethical pharmaceutical field and, with the discovery of Aureomycin chlortetracycline, the country's leading producer of broad spectrum antibiotics.

LES SAUERS

Schwarz Returns to Holland

Adolph Schwarz, president of the Polak & Schwarz world organization, recently returned to Holland after a six weeks visit in New York, during which time he discussed the contemplated expansion of Polak & Schwarz's activities in the United States, including the recently completed enlargement of the companies' manufacturing facilities in Teterboro, N. J.

Cosmetician in the new cosmetic testing laboratory recently completed in the Dodge & Olcott, Inc. building, 180 Varick Street, New York. The new laboratory is designed to accommodate all the necessary equipment for testing the compatibility of perfume ingredients in total formulation of all types of cosmetics.



FREDERICK WILSON

Asst. to Bourjois President

Frederick Wilson has been appointed to the newly created position of assistant to the president of Bourjois, Inc., according to an announcement by Lewis F. Bonham, president of the company.

Sauers Joins Lanolin Plus

Les Sauers has been appointed general sales manager of Lanolin Plus, Inc., according to an announcement by Dr. J. Schultz, president of the company. Mr. Sauers was formerly general sales manager for Helene Curtis Industries.

O'Brien Is Shulton V. P.

Election of William H. O'Brien as vice-president for finance of Shulton, Inc., has been announced by George L. Schultz, president. Mr. O'Brien joined Shulton in September, 1953 as assistant controller. He was named controller and assistant treasurer in July, 1954. Prior to coming with Shulton he was vice-president and a director of Raybur Corporation. He is a graduate of the University of Notre Dame.

Ciba Representatives

Thomas James McDaniel has been appointed professional service representative in the Chicago territory of Ciba Pharmaceutical Products Inc., and Jesse O. Reed, representative in the Jackson, Miss. territory, according to Vincent A. Burgher, sales vice-president.

Heyden Building at Pensacola

Heyden Newport Chemical Corporation is constructing a new plant at Pensacola to produce methyl isopropyl catechol, a new turpentine-based chemical which is a low-cost, highly efficient stabilizer for synthetic rubber manufacture, Simon Askin, president of Heyden Newport, has announced.

Ungerer to Increase Service on West Coast

Ungerer & Company, Inc. has announced plans in increase customer service on the West Coast. One of the immediate steps in the expansion program is to stock important items in Los Angeles. Frank A. Murdock, recently appointed manager of the West Coast Division, will be assisted at the Los Angeles headquarters by George MacDonald, who has been with the firm for 33 years.

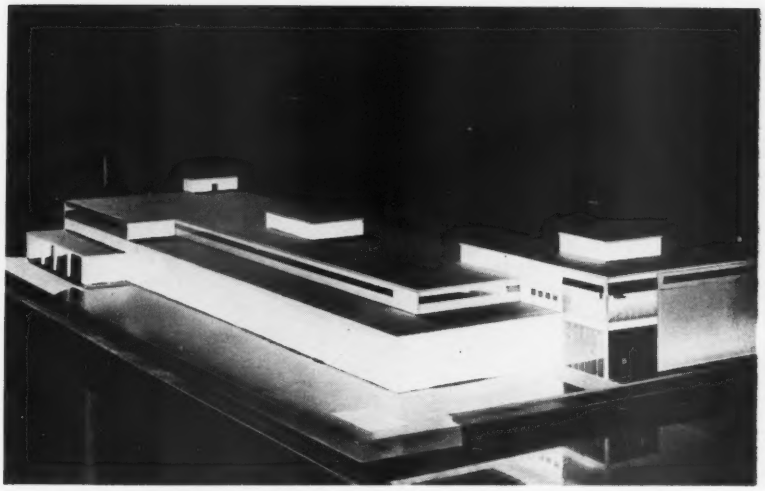
Carbide Chemicals to Build Technical Service Laboratory

Union Carbide Chemicals Company, Division of Union Carbide Corporation, has approved plans to build a technical service laboratory on its Westchester County property near Tarrytown, N. Y. It is expected that the laboratory will be completed early in 1959. D. B. Benedict president of the company, in announcing plans for the new laboratory, stressed the importance of providing customers in the chemical industry with technical service.

Lilly Reorganizes Industrial Medicine and Safety Dept.

Eli lilly and Company has created two new departments from what was formerly its industrial medicine and safety department. Heading the new safety and industrial hygiene department is G. R. Cummings. Karl C. Kohlstaedt, M.D., has been appointed head of the new industrial medicine department. Both men were assistant heads of the old department.

James D. Peirce, M.D., who continued to serve as head of industrial medicine and safety after he was named assistant director of the personnel relations division in 1955, will be able to devote more time to health and safety programs for Lilly employees in all plants and subsidiaries.



Model of the three story, white building which Bristol-Myers is building at Hillside, N. J. on the site between U. S. Highway 22 and the Irvington branch of the Lehigh Valley Railroad, adjoining present Squibb buildings. The project is scheduled for completion by May, 1958.

Aerosol Education for Public

A year-long program of consumer publicity and promotion for aerosol packaging has been launched by the Aerosol Division of the Chemical Specialties Manufacturers Association. Objectives of the program are:
To educate consumers in the convenience, economy and safety of aerosols. To give consumers the lastest information on availability of various types of aerosols. To encourage marketers of consumer products to investigate and convert to aerosol packaging. To explore new markets for aerosol products. To establish a recognized central industry source of information on aerosols.

Promoted by Pennsalt

Dr. Murray Hauptschein has been promoted to group leader in the organic research department of Pennsalt Chemicals Corporation's Technical Division, it has been announced by Dr. George McCoy, manager of research and development.

Hart is MCA Chairman

Ernest Hart, president, Food Machinery and Chemical Corporation, was elected chairman of the board of directors of the Manufacturing Chemists' Association June 6 during its 85th Annual Meeting.

Harry B. McClure, vice-president, Union Carbide Corporation, was elected chairman of the executive committee. General J. E. Hull, USA (Ret.), full time president and a director, was re-elected.

R. L. Murray and D. S. Frederick were elected vice presidents. Mr. Murray is chairman of the board, Hooker Electro-chemical Company. Mr. Frederick is vice-president, Rohm & Haas Company. M. F. Crass Jr., full-time secretary-treasurer, was also re-elected.

John A. Runnels

John A. Runnels, 64, Southern regional sales manager of Owens-Illinois Glass Company, died April 30 in St. Joseph's hospital, Atlanta, following a heart attack. Known affectionately as "Uncle Jack," Mr. Runnels had been with Owens-Illinois since 1913.

Raymond L. Thatcher

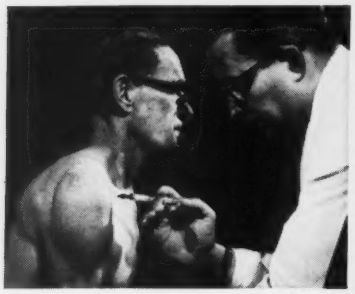
Raymond Linden Thatcher, director of the Quality Control Division of E. R. Squibb & Sons, died May 19 in Muhlenberg Hospital, Plainfield, N. J. He was 44 years old. Surviving are his widow, Mrs. Velrose Stolz Thatcher; two sons, Linden E. and Jonathan Raymond; a brother, Willard H. of Madison, and a sister, Mrs. Thomas J. Maher of Stamford, Conn.

DR. KARL C. KOHLSTAEDT

G. R. CUMMINGS

Clinicians Acclaim Superiority of Hydrocortisone

Recently the spotlight of comparative evaluation has been repeatedly focused on hydrocortisone in the treatment of many disorders. In impressive new publications, this steroid—the chief hormone of the human adrenal cortex—is accorded major commendation.[1-3] Thus, authoritative clinical judgment acclaims anew the advantages of hydrocortisone in the treatment of many diverse disorders in many patients. An editorial points to the superiority of hydrocortisone ointment in pruritus ani.[1] A monumental new *Dermatology* remarks that this corticoid is the best single medication for circumscribed neurodermatitis in any area.[2] The authors recommend topical hydrocortisone highly in many other dermatoses, and affirm the extreme rarity of significant local or general reactions to this type of therapy.[2] Systemic hydrocortisone is now recommended as life-saving in many geriatric patients unable to tolerate anesthesia or surgery without such hormonal treatment.[3]



Intra-articular hydrocortisone greatly relieves joint pain and stiffness in osteoarthritis.

Thus, as the clinical use of hydrocortisone has been extended on a vast scale through the years, notable advantages of this steroid have become established. Perhaps most striking is this fact about topical therapy: ***Many patients who fail to respond satisfactorily to available analogues of the hormone can be markedly benefited by hydrocortisone itself.***[1,4-6]

As the principal hormone of the human adrenal cortex, hydrocortisone may well be metabolized "more physiologically"—that is, in more nearly normal (or natural) chains of reactions than are certain of its congeners. Such considerations are highly significant in both topical and systemic use of the hormone since freedom from side effects is as important as pharmacologic potency.

So, in the intense competition of modern pharmacotherapeutics, hydrocortisone wins new high honors and, on the sound bases of clinically proved rationales, gains greater and greater markets.

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5. Frank, L., and Stritzler, C.: *A.M.A. Arch. Dermat.* 72:547-549, Dec. 1955.
6. Robinson, H. M. Jr. *et al. U. S. Armed Forces M. J.* 7:963-978, July 1956.

(*Many additional references on request*)

Hydroc
Wins New

And You Win New Markets with

In the tests of time and searching investigation, the chief hormone of the human adrenal cortex has again and again been reported to be unexcelled in many clinical situations—and often has been designated the therapeutic agent of choice. Markets for this hormone, alone or in combinations for topical or systemic use, continue to expand rapidly.

MERCK & CO., Inc.

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Management Forum

by Francis Chilson

INDUSTRIAL CONSULTANT

Charles F. Kettering on Education

Kettering's devotion to "do-it-yourself" led him, through the years, to take a dim view of the values of strictly formal engineering education. He had seen too many good engineers who were not formally trained, and to many "trained" men who were not good engineers.

Kettering likes to tell the story of Thomas Midgley, Jr., his associate in the development of Ethyl gasoline. In college, Midgley took mechanical engineering. But because the problems he had to solve during his career proved to be so largely chemical, Midgley turned chemist. Over the years, by intensive application and practice, Midgley educated himself to be a research chemist so thoroughly that, in time, he was awarded all four of the principal medals for achievement in chemistry and was elected president of the American Chemical Society.

"I can take any group of young people," says Kettering, "and teach them to be inventors if I can get them to throw off the hazard of being afraid to fail. A study made some years ago said that the more education a man has the less likely he is to be an inventor. Now the reason for that is quite simple. It is because, throughout his life, he has been taught the danger of failure. From the time he enters the first grade until he graduates from the university, he is examined three or four times each year; if he fails, he is out and, in many cases, disgraced. In research and invention work, you fail hundreds and even thousands of times; and, if you succeed once, you are in.

"We need to teach the highly educated person that it is not a disgrace to fail and that he must analyze every failure to find its cause. He must learn how to fail intelligently, for failing is one of the greatest arts in the world. Once you've failed, analyze the problem and find out why, because each failure is one more step leading up to the cathedral of success. The only time you don't want to fail is the last time you try."

Do It Yourself

The problems of engine knock continued to absorb Kettering, and he sought the answer both in the laboratory and behind the wheel in test cars. He was a firm believer in making his own tests. Many of his friends thought he should delegate such detailed duties to others.

Kettering recalls the time he was able to prove how right he was: "I was running some tests off the coast of Florida in connection with automatic steering devices for small boats. I used to work out there every day the weather was bad, from about 9 a.m. until 3 or 4 p.m. The tests had to be run in bad weather because we couldn't find out anything in good weather.

"Two friends of mine down there for a vacation said: "We think you are crazy, running that boat up and down all day long. Why not get somebody to do that for you?"

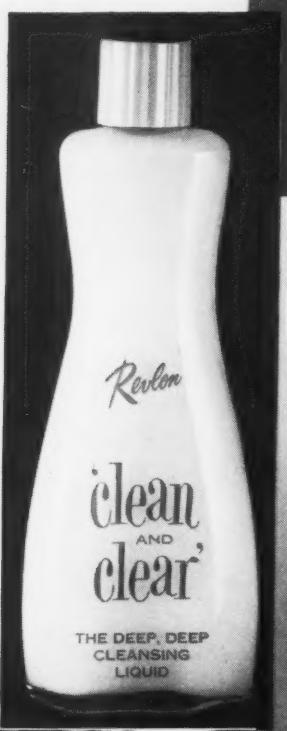
"One of those men happened to be a very good golfer, and the other, an excellent violinist. So I said, 'I'll tell you what I'll do. You fellows get somebody to play your golf game for you and to practice your fiddle for you. If you find that that works, let me know, and I will get somebody to ride that boat for me. Right now, I do not know how any body else could get my firsthand experience for me.' "

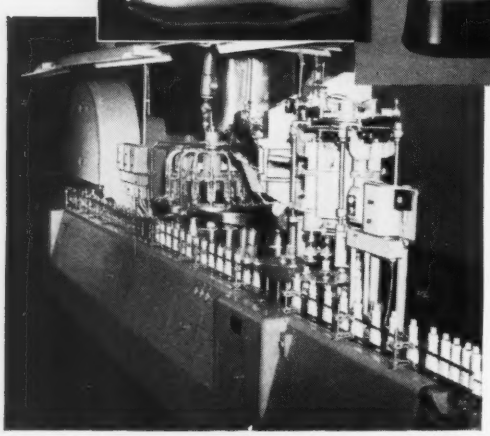
On Profit

As General Motors prospered—in great measure as a result of his contributions to its progress—Kettering prospered too.

"My fundamentals of business are simply these," Kettering said once: "I know I can't make and sell something for less than it costs me...,I also know that if my product isn't worth more to the customer than he pays for it, I can't stay in business.... That's the double-profit system. You have to have

REVLON'S WINNING ANSWER IS . . .





Synchronized bottling line handling air cleaning, gravity filling and rotary capping at Revlon's plant in Passaic, N. J.

PNEUMATIC for cleaning, filling, capping and labeling

There's a very practical side to REVLON'S brilliant success with its notably glamorous products. Smart advertising, promotion and merchandising has been matched by skilled production — including, in the packaging phase, highly effective use of PNEUMATIC equipment.

Cleaning, filling, capping and labeling of REVLON containers calls for precision performance, due to the "high style" nature of the containers, caps and labels. Gentle handling at uninterrupted high speeds is an in-built result of the advanced design and exceptionally expert engineering that are the very heart and soul of PNEUMATIC machines. America's leading producers of both wet and dry products use more PNEUMATIC equipment than any other make, by far — simply because PNEUMATIC means "lower cost per container" operation, every time.

PNEUMATIC SCALE CORP., LTD., 70 Newport Ave., Quincy 71, Mass. *Also: New York; Chicago; Dallas; San Francisco; Los Angeles; Seattle; Leeds, England. Canadian Division: Delamere & Williams Company, Ltd., Toronto.*

★ PNEUMATIC

Packaging and Bottling Equipment

a small profit for the manufacturer and a very large profit for the user.

"The best way to find out how much your customer's profit is is to ask yourself how much more you would pay for an electric-light bulb than it costs if you couldn't get another one. . . .That's the customer's profit—and it's a lot more than they get for the lamp itself. . . .It is the customer's profit that has built this country. It wasn't built from manufacturing profits."

On Solor Energy

In 1947, Kettering retired. But he is still active. Through the nonprofit Charles F. Kettering Foundation, "Boss Ket" is busy in his laboratory trying to solve the riddle of photosynthesis—the process by which sunshine is converted to energy in plant life. Ket wants to know "what makes grass green."

"In only a few days," he said not long ago,"the earth receives in sunshine as much energy as is stored up in all our coal, petroleum, natural gas, oil shale and tar sands. The sunshine of a few days is thus equivalent in energy to all the fuels deposited on earth in all the millions of prior years. If we could catch only two tenths of one percent of the energy of sunshine, we would double our food supply and everything else. If we don't succeed in catching at least that much, it is because we are a little stupid up in the attic. And I don't think we are that bad."

On The Future

At 80, the robustness of Charles F. Kettering's views is undiminished, and he speaks with the vibrant hopefulness of youth.

"I can conceive of nothing more foolish," he has remarked,"than to say the world is finished. We are not at the end of our progress, but at the beginning. We have but reached the shores of a great unexplored continent. We cannot turn back. . . .It is man's destiny to ponder the riddle of existence and, as a by-product of his wonderment, to create a new life on this earth."

The above excerpts were taken from an article by T.A. Boyd in Look Magazine, April 2, 1957

You Never Know

The majority of purchasing agents are courteous gentlemen who are unfailingly polite even to salesmen from whom they buy nothing. But every once in a while one finds a p.a. who is a five star bastard and a practitioner of Hitlerian tactics upon all the poor slobs who have to call upon him. Some years ago one of these poor slobs tried his damndest to get some business from one of these little tin gods. He was rudely turned down time after time because his product didn't "match the specifications." Finally the salesman decided to try a trick. He got some of the material being used by the purchasing agent's company, put it into his own sample bottle and resubmitted it as a sample from a new batch. That too was turned down as not meeting the specifications! Years went by and now by the vicissitudes of business and the operation of the laws of chance, the erstwhile salesman is president of the purchasing agents company! Mr. P. A. has forgotten this little incident but El Presidente hasn't! Someday when the time is right Mr. President's mailed fist is going to come down on the purchasing agent's noggin, and the P.A. will think the ceiling fell on him! The moral of this story, Mr. Purchasing Agent, is that the little guy who'd kiss your backside for an order today may be the same guy who'll be kicking it a few years hence!

Changing Jobs

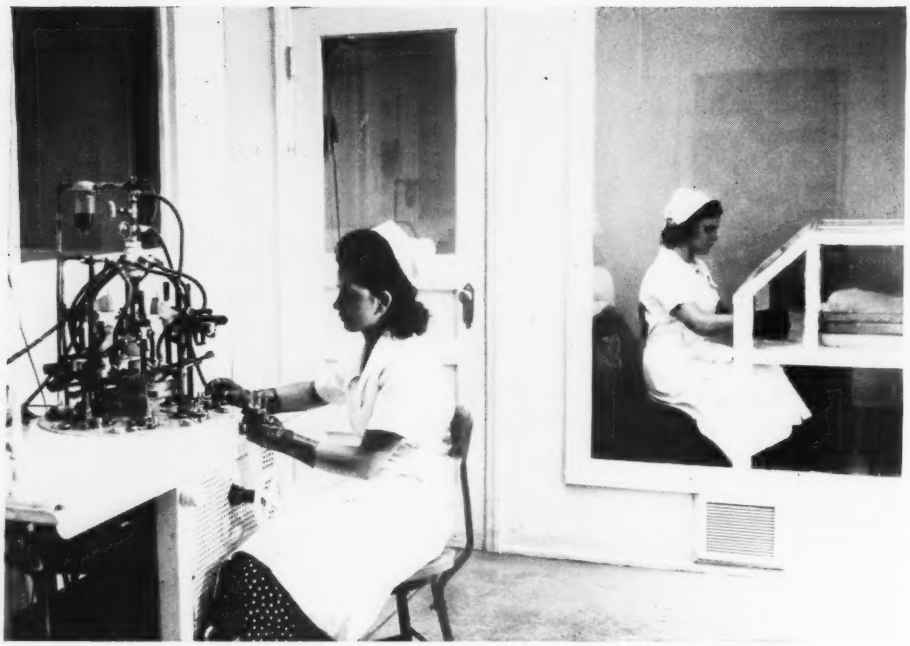
Whenever anybody tells me he's looking for a job I invariably tell him to switch jobs within the industry—provided of course he likes the industry and feels he has a chance in it. I've known a number of guys who didn't follow this advice and went chasing rainbows in other unrelated industries simply because, for the moment, there was more money to be earned. Few of these guys ever get back and regain their former standing. The easiest thing in this world is to be forgotten. One may be a big shot—or thinks he is, and he may know a lot of people—but within a year after he leaves the industry his name rarely comes up, and within three years it never comes up. When a man switches his job from one industry to another, he loses all the contacts he has made. And those contacts, insignificant as they may appear to be individually, are collectively the force which creates reputation—assuming of course that his work is good. If it isn't, or the individual has in some way violated the mores of the industry, he is well advised to get out and start over.

Character Assassins

Whenever I interview a man for an important post I discount his previous references. Some employers are character assassins and will never say anything good about anyone important who leaves their employ. Some exaggerate the man's virtues because they want to help him get a job as soon as possible. (Generally there is some ulterior motive behind this.) Some will exaggerate a man's abilities and by implication depreciate his character. I think a man will reveal himself if you talk with him long enough.

Education Shortage

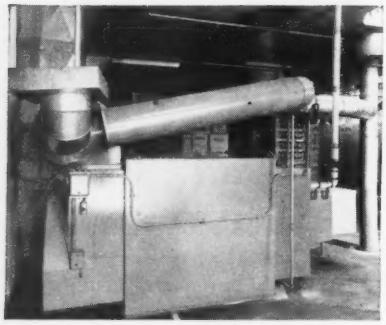
The United States is desperately short of teachers and school facilities particularly in the colleges and universities, but nobody seems to have thought of a very simple solution to the problem. Schooling should be placed on a fifty week per year basis especially in the colleges and universities. Thus the output of these institutions can almost be doubled with the same teaching staff and the same facilities. Like-



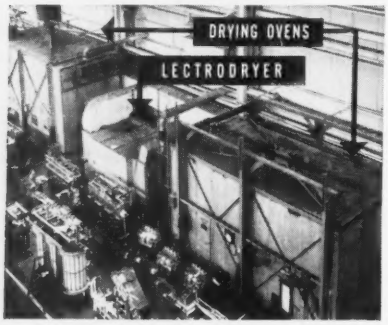
Ampoules are filled in DRY *box at right and sealed in near room, held at 10% relative humidity by a Type CH Lectrodryer.*

Are you just living with your moisture problems?

Lectrodryer can relieve those worries*



This CHO Lectrodryer delivers DRY *air on a continuous basis, 14 hours per day, to a sugar conveyor system in a candy factory.*



*Transformer production was more than doubled—*DRY*ing time reduced from 92 to 32 hours—when a manufacturer fed* DRY *air to these ovens.*

MOISTURE gums-up materials in storage—makes handling difficult and destroys them. Processes are slowed down and even stopped. Recognize that unwanted moisture is causing your troubles and you've gone a long way toward eliminating them.

Maintaining DRYness in dry boxes where pharmaceuticals are packaged or electronic equipment assembled presents little difficulty. In workrooms containing dozens of workers, however, you must compensate for moisture they exude, as well as leakage through walls and doorways.

Lectrodryer engineers have been solving such problems for years—advising on methods of insulating areas against moisture infiltration, then supplying controls and DRYing machines to hold humidity down.

The book, *Because Moisture Isn't Pink,* tells how others have solved their problems. For a copy, write Pittsburgh Lectrodryer Division, McGraw-Edison Company, 309 32nd St., Pittsburgh 30, Pennsylvania.

In France: Stein et Roubaix, 24 Rue Erlanger, Paris XVI.
In Belgium: S. A. Belge Stein et Roubaix, 320 Rue du Moulin, Bressoux-Liege.

Lectrodryer

*REGISTERED TRADEMARK U. S. PAT. OFF.

wise the salaries of teachers should be increased accordingly because many teachers, particularly college teachers, are so poorly paid that the majority of them, especially those who are married, take summer jobs anyway. There is no real reason why kids can't go to school fifty weeks a year. When they get a job they have to work eight hours a day for fifty weeks every year, hence, there is no reason why they cannot study for a similar period. Thus we could cut the time required to get a degree about in half.

Private Offices

I have always maintained and still do, that private offices should be limited to senior executives; to those whose work is of an extremely confidential nature; to those who must do a lot of interviewing, such as personnel men and to those whose work requires the storage and display of samples and marketing material such as sales promotion or advertising men. Partitions are costly to build and partitioned areas require special provisions for ventilation and lighting which adds still more to the cost. You can depend upon it that a fully partitioned office costs easily twice as much per square foot as open offices.

It would be ideal to have no partitioned offices at all even for officers and executives. This could be done with a sufficient number of conference rooms, provided the floors were carpeted and the ceilings and walls sound proofed. Carpeting is expensive initially but it is cheaper to maintain than any other kind of floor. Data processing machines, bookkeeping equipment and typewriter banks can be isolated behind partitions. Office equipment makes a lot of noise.

It is useless however, to try to make executives work out in the open unless a perfect sound proofing job is done. A modification of private offices is to use low, semi-partitions in the form of stalls. Each stall is large enough to contain a desk, a work table and a couple of chairs.

The partitions are about five feet high, affording a measure of privacy to the occupant of the stall. The virtue of these portable units is that they do not interfere with lighting or ventilation; they are not fastened to the floor and they cost only a small fraction of the cost of full partitions.

When a new office is laid out it is always a problem to decide who shall have fully partitioned offices, who shall have stalls or cubicles, who shall have to be content with desks in the open office. The private office is regarded as a symbol of prestige. The allocation of a private office to one person and the omission of another at the same salary level is a common cause of jealousy, discontent and politics. In this country we had a swing toward wide open offices and many of the really big offices are still like that, but now the pendulum is swinging back and every little pipsqueak of a secretary or straw boss feels that he is entitled to a private office.

The office is the overhead department. In many plants the office people exceed the total of production and sales workers combined. Hence the cost of offices and office work should be kept down.

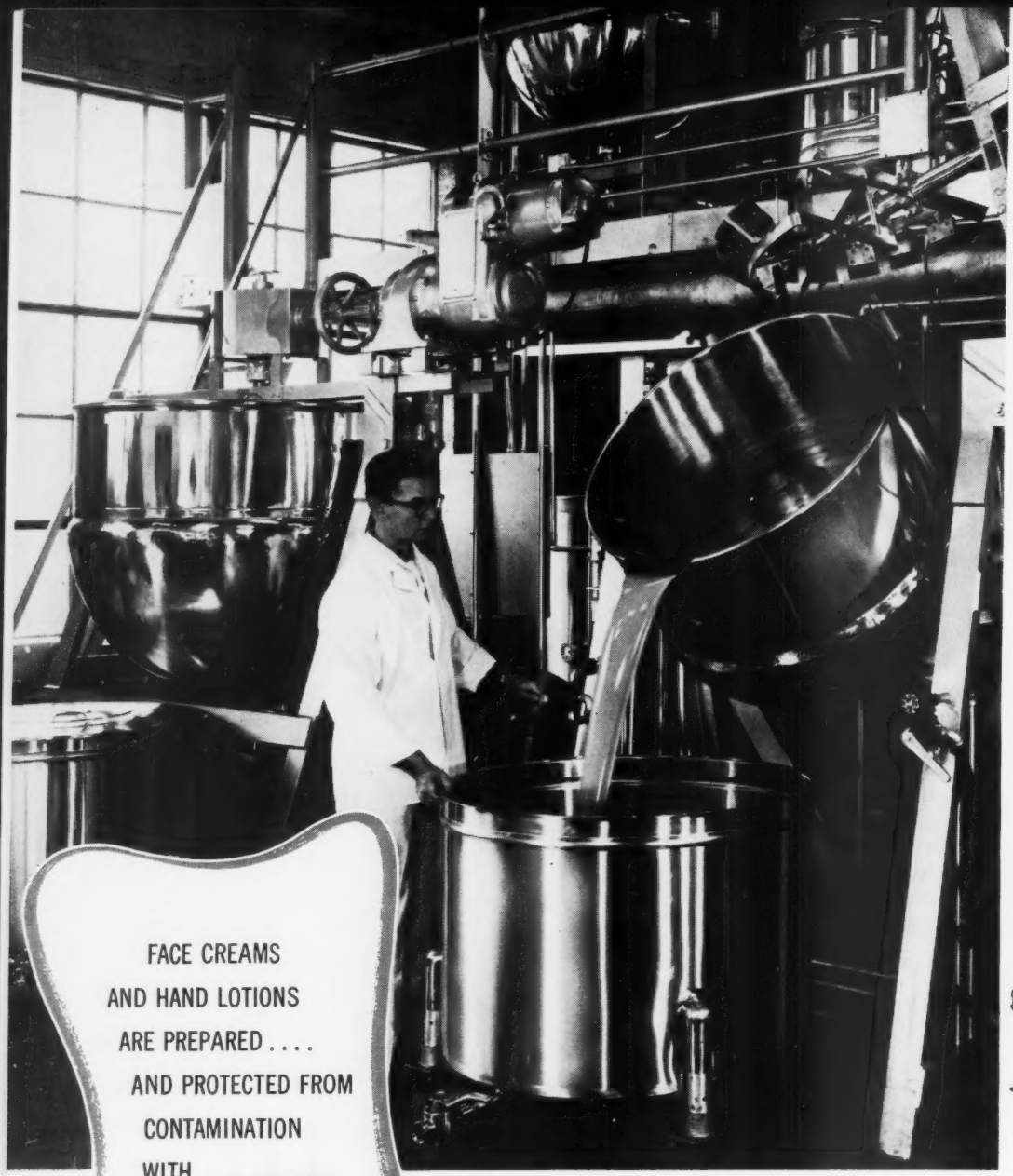
Parking Lots

The ubiquitous automobile is forcing factories farther out into the country where plenty of space can be obtained for parking. Some factories that were moved to the country just after the war have already been found to be short of parking space. Lack of foresight in buying land is a very common failing. Many plant managers assumed apparently that people would continue to pool cars as they had done during the war. But they are not doing so. Just the opposite. Surveys have shown that people working in the same factory and living in the same block prefer to drive their own cars. This trend will not be reversed. It is to be hoped that motor scooters and small foreign type cars will become popular. If this happens we can cut down the amount of ground space allocated to parking. In the meantime the best thing to do in locating a new plant is to buy far more land than you think you will ever need. It's a good investment. But good industrial land reasonably close to large cities is becoming scarce and very expensive. In spite of the cost we may be forced to design our one story plants either with parking basements or with ramps and roof parks.

Influence of Depreciated Capital

Tens of thousands of farms and businesses are in existence today because of the effect of capital invested in the past and paid for or written off in one way or another. The majority of farmers are using barns, houses and equipment that were acquired fifty or seventy-five years ago, when a 100 foot barn could be built of first class materials by first class carpenters for about $500.00. A poor imitation of the same barn would today cost the farmer ten thousand. The farmer gets by because he has no capital charges or depreciation to meet. Thousands of businessmen are in the same position today operating old obsolete plants which were paid for by predecessors and upon which capital charges and depreciation are nil. These old plants originally cost about a tenth of what they would cost to replace today. But they can't last forever and they create a false sense of security in the meantime by causing their operators to believe their costs are competitive. Many of the firms in the drug and cosmetic industry would be in a hell of a fix if they were suddenly confronted with the necessity of replacing their plants in order to continue in business. They don't have adequate capital reserves.

Fortunately we are operating in an industry in which plant investment in relation to average sales is very small. But it is increasing year by year as the industry becomes larger and more complex. Those who are operating in antique plants now should keep



FACE CREAMS
AND HAND LOTIONS
ARE PREPARED . . . .
AND PROTECTED FROM
CONTAMINATION
WITH

LEE STAINLESS STEEL KETTLES

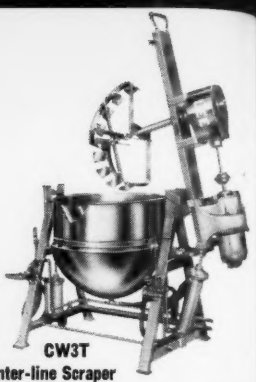
Courtesy of Charles of the Ritz

Assuring high quality control in the production of delicate creams and lotions, these Lee steam-jacketed stainless steel kettles are corrosion-resistant and easy to clean and keep clean.

Complete product mixing is obtained through the use of Lee double-motion center line scraper agitators, whose large stainless steel scraper blades continually move the contents from the heated walls toward the center, keeping an even temperature throughout.

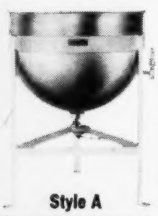
Lee hydraulic operated cylinders—using your present water lines—give perfect control and safety not only in tilting the kettles for pouring and cleaning, but also in raising and lowering the tilting agitators.

Descriptive bulletins for all of our specially-designed processing equipment available on request.

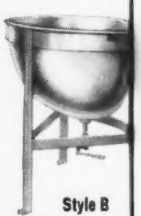


CW3T
Center-line Scraper Agitator Kettle
80 to 300 gal.

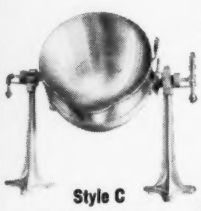
Quick Cooling Pan
50 to 200 gal.



Style A
Two-thirds Jacketed
5 to 500 gal.

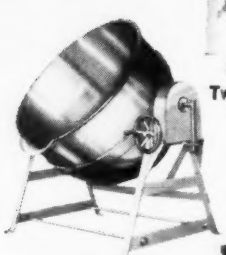


Style B
Full Jacketed
10 to 300 gal.



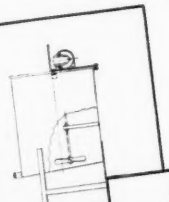
Style C
Two-thirds Jacketed
5 to 100 gal.

Pressure Kettle
Two-thirds Jacketed
40 to 200 gal.

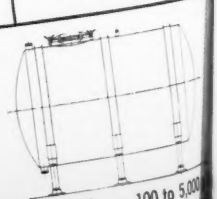


Style CW
Two-thirds Jacketed
80 to 300 gal.

Pulp Tank
500 to 2,000 gal.



Mixing Tank
25 to 500 gal.



Storage Tank — 100 to 5,000

Technical bulletins fully describing these processing units gladly sent on request.

LEE
METAL PRODUCTS CO., INC.

418 PINE STREET, PHILIPSBURG, PA.

Designers and Manufacturers of Corrosion-Resistant Processing Equipment for over 25 years.

constantly in mind that the time is not far off when they will have to up their ante very considerably in order to stay in business. The way to meet the future is get ready for it now.

Skeletons Out of Closets

John Lemmon, president of Lemmon Laboratories, Sellersville, Pa. (Colonel Sellers to the local folks), told me of an experience he had in Philadelphia just after he had migrated up from Nawth Ca'lina. So accustomed was John to running barefooted over the Nawth Ca'lina mountings that when he came up North he used to put gravel in his shoes so that his feet would feel comfortable. Shortly after he came to Philly he went out on a party with some damyankees and during the course of the festive evening a reasonable amount of moonshine was consumed. This means, by North Carolina standards, about a half gallon per person. After the party the young lady whom John was squiring insisted on being taken to the printer's Mass at two thirty am. before being escorted home. Like the chivalrous southern gentleman he is, John accompanied the young lady to Mass in spite of the fact that he had never been in a Catholic church before. Hence, he was unaware of the custom of genuflecting on one knee before entering the pews.

So, when his young lady genuflected in proper style, John thought the drinks had got the best of her and that she was passing out. So John gallantly grabbed her, picked her up bodily and placed her in the pew. "By God! Honey!" John said. "Ain't no gal out with me goin' to fall down on her face just 'cause she done drunk a little likker!" The flustered young lady, who was by then the cynosure of all eyes, did not appreciate John's chivalry. Her eyes spit fire at him and when Mass was over and they were outside the church, she gave John such a tongue lashing that the poor little ole Rebel thought Sherman was after him. "She done give me fits!" John plaintively told me afterward. "An' all I was doin' was trying to he'p her"!

Thank God for Stupidity

It would be a hell of a world if everybody in it were as bright as you and I. There wouldn't be anybody to do the heavy, boring, routine, dirty work. Many young men are born with a spark of ambition even though they are born of and nurtured by ignorant, unambitious people in atmospheres that are not conducive to study. They get through the lower schools with reasonable averages—some of them with very high averages—they take jobs; eventually they marry and spawn children. That's the finish. Whatever they elected to do they will do for the remainder of their lives. Something happens to kill the spark of ambition that might have driven them onward. But thank God it does happen because we couldn't live without the clods. Everything would be too expensive and we'd starve to death. Who would till the earth, drive the trucks and clean the sewers?

Modern industrial civilization depends upon a vast pool of laborers in farming, production, mining and service activities to do the heavy and the dirty work—all the chitchat about automation to the contrary nevertheless. Many industrial products are made from raw materials gathered abroad or made abroad by people who make only a few cents a day in wages. Some of these people are little more than slaves. What will happen to the price of such raw materials when all these Asiatics, Africans and Europeans have reached wage level comparable with our own? It's one thing to be able to keep people reasonably happy doing dirty work by paying them high wages as we are doing now. But they are our own people. But when wages move higher and higher throughout the world as they must, prices will be so high for labor and imported raw materials, that we won't be able to buy anything. Maybe the idea of getting away from the self sufficient farm wasn't so hot after all. Maybe Aldous Huxley had the right idea: feed all those who must do the disagreeable labor a tranquilizer like "Soma" that will keep them contented—with low wages especially.

Frills And Foibles

Hold on to your hats boys! A new management fad is on the way. The management "engineers" will dress this one up and sell your Bigboss a "new" idea at a fabulous fee. This fad is called "executive coaching" or "appraisal review". Neither name is catchy enough but the management engineers will surely supply one like "Imagineering" or "Brainstorming". We are suckers for catch words and phrases.

The idea behind this new fad is a heart to heart talk between an executive and his subordinates. The talk is supposed to be cozy and private and very informal with unrestrained frankness on both sides. The Boss is supposed to act like a Dutch Uncle and tell his subordinates one at a time just how they stand in the organization, how their performance can be improved, where they can go if their performance does improve, along with a lot of personalities and bilgewater. The employee (if he dares) is supposed to be equally frank and forthright with his boss.

Let's listen in while J. Peter Schlopps, president of the Scuttlebutt Drug Company has an appraisal conference with his plant manager, A. Pratt Fall.

J. P's. office is walnut paneled, heavily carpeted, air conditioned and soundproofed. The chairs are upholstered in green leather and the broad polished expanse of the Boss's desk is, to create an impression of promptitude and high efficiency, unmarred by a single paper. (J. P. shoves everything into his desk drawers and forgets where he puts the stuff. Every morning he raises hell with some subordinate for failing to give him a report he had asked for. His secretary invariably saves

Attractive, convenient squeeze tubes made of a Du Pont ALATHON® resin

"Handy" is the word for the newly designed squeeze-to-use tubes made of Du Pont ALATHON. And besides customer convenience, flexible tubes made of ALATHON polyethylene resin provide some new and unique merchandising advantages. The fact that tubes made of ALATHON are pliable and dentproof enables them to be presented at the point of sale without exterior cartoning. Thus the tube itself may now be displayed for customer selection.

Packaging in tubes made of ALATHON has enabled the Northam Warren Corporation, Stamford, Conn., to merchandise "CUTEX" hand cream in three ways. For self-service stores the tubes are suspended by a cardboard collar from pegboard spindles. Variety stores utilize individual stand-up cards, and drugstores feature platform displays.

The tubes of ALATHON, manufactured by the Bradley Container Corp., Maynard, Mass., are strong, resilient and warm to the touch. Since ALATHON never becomes brittle or deteriorates, it affords lasting protection . . . extends the shelf life of products. In addition, ALATHON is tasteless, odorless and non-toxic . . . can in no way affect product contents.

Special formulations of ALATHON have been designed to meet specific packaging requirements. Since ALATHON 20 combines outstanding resistance to environmental stress cracking with good strength and flexibility, this formulation is best suited for squeeze-tube packaging applications.

But why don't you evaluate an ALATHON resin in terms of your own requirements? Maybe an ALATHON polyethylene resin can make a better package for your product. For more information write to E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Room 256, Du Pont Building, Wilmington 98, Delaware.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

the day by turning up the report after reading through the helter skelter mass of papers stuffed in J. P.'s desk.)

"Come in, Al, sit down. Have a cigar? Miss Fattbum close the door and see that no calls or callers get through to me."

The secretary leaves, closing the door behind her. A. Pratt Fall picks up the proffered cigar a trifle suspiciously as if he expected it to explode. He takes a chair and lights the cigar, puffing slowly wondering what Old Schlopps has got up his sleeve.

"I want to have a heart to heart talk with you, Al. Sort of man to man stuff. No holds barred. I'm gonna tell you exactly what I think of you and I want you should do likewise with me. What goes on here is between us and what we say will stay here. I want you should be frank with me as I will be with you. No grudges. No hangovers. Mebbe I need a frank appraisal too." J. P. sticks a thumb in his vest, leans back and blows a smoke ring at the ceiling.

He continues, "Al you been our plant manager four years. What have you done for the company. Nothing! I ask you. Always you want more money, more machines, more people. And still costs go up and production is delayed. Has the plant got constipation with so much production and nothing delivered? Oi!"

"You're cockeyed," Al responds. "Remember Boss what you just said about perfect frankness? Well, I can dish it out too. You talk about more money, but you're a tight fisted old skinflint. I'm underpaid; my help is underpaid. I can never get a dime out of you for anything unless I fight for it for six months. As for machines, there isn't a decent machine in the plant. All I can get is a lot of worn out, second hand junk. The plant is a rat's nest. But can I clean it up and paint it? No. You're too cheap to spend the money. Money to you is all income—no outgo."

"Don't call me too cheap! I'm paying your salary. I mean I was. You're fired."

Exit: A. Pratt Fall.

Tote System

Those who use bulk dry materials in substantial quantities but not in sufficiently large quantities to use a silo system will find an answer in the use of tote returnable bins. These hold from half to a ton each. They are designed with loading and discharging means that are moisture and dust tight and are handled by means of conventional fork trucks. The manufacturer of the bulk products fills them and ships them to you by truck or rail. You stack them in storage until wanted. A fork truck brings the tote bin to the dumping point and the empty is returned to the bulk manufacturer. Tote bins are made in almost every kind of metal. They save a great deal because the elimination of the bagging operation and the bags saves several dollars per ton. Handling into and out of storage is in unit loads; there's no loading or unloading of pallets. I have used them and they work very well. One manufacturer who has had a lot of experience building tote bins is Tote System Inc., Beatrice, Nebraska.

Gifford-Wood Catalog

A comprehensive 24-page, 2-color catalogue describing its newly acquired Eppenbach line of wet mixing and homogenizing equipment is now offered by the Gifford-Wood Co., 420 Lexington Avenue, New York 17.

Three different types of Eppenbach mixers and homogenizers are extensively covered in the new catalogue: Colloid Mills for refining wet materials to very fine size; Homo-Mixers for fast blending and homogenizing of light to heavy viscosity materials; and Agi-Mixers for fast, intensive blending and homogenizing of a wider range of light to heavy viscosity materials.

Text material discusses operation, specifications, dimensions, applications, advantages, special features and possible modifications for various models of these three units. Photographs, line and engineering drawings, and tables illustrate this material.

For copies write to Patrick Orto, Gifford-Wood Co., Graybar Building, New York 17.

Miscellaneous

The Ducon Co, 147 East 2nd St., Mineola, L. I., N. Y. offer very compact continuous discharge dust collectors. The Jeffrey Mfg. Co., Columbus, O. have a multitier vibrating dryer and granulating combination that uses flat steel decks on which material moves by vibration as it dries.

Vibratory Feeder

The Syntron Company 570 Lexington Avenue, Homer City, Penna., has announced a new, extra small vibratory feeder, the Model F-TO, having a trough size of 1½" x 12" and a feed rate capacity of up to 500 lbs. per hour of bulk material.

This new model utilizes the electromagnetic vibrating principle, eliminating bearings, sprockets, chains, gears, belts and idlers, etc. It is 6" high by about 15" long and weighs 10½ lbs., making it suitable for incorporation into weighing and packaging machines, and other types of processing equipment.

Control of rate of material flow from the feeder is by a rheostat in the separate controller. The rate of feed can be regulated from a mere trickle to a full flow. Operation is from 115 volt, 60 cycle, a-c.

Vibrating Screen Separators

A new 22-page catalog describing the operation and application of SWECO vibrating screen separators has been issued by Southwestern Engineering Company, Los Angeles, California. This equipment is used for the separation of solids from liquids and the screening of all types of dry materials.

STOP

AT THE FIRST SIGN OF YELLOW

Look to 2-Amino-2-Methyl-1, 3-Propanediol

White stays white! AMPD soaps are superior in stability of color and in freedom from yellowing or darkening – even after prolonged storage. Neutral soaps of this aminohydroxy compound possess unusually high emulsifying power and have no odor that will interfere with perfuming the final product. Creams made with this compound are remarkably free from oil "leakage". Consistency and texture of creams and lotions remain constant even after long periods.

For cosmetic creams and lotions, brushless shaving creams, hand lotions and mineral oil emulsions, put this superior emulsifying agent in your formula. Write today for samples and technical data sheet. We will be glad to give our recommendations on your particular emulsion problem.

PROPERTIES OF AMPD
(PURE MATERIAL)

Formula	$CH_2OHC(CH_3)NH_2CH_2OH$
Molecular Weight	105.14
Melting Point, °C	109 to 111
Boiling Point, °C	151 to 152 at 10mm
pH of 0.1M Aqueous Solution at 20°C	10.8
Solubility in Water g/100 ml at 20°C	250

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Compounder's Corner

Cosmetic and Pharmaceutical Formulary

The new book "Clinical Toxicology of Commerical Products" by Gleason, Gosselin and Hodge ($16.00) is intended to assist physicians in the treatment of acute poisoning from the misuse of various commerical products. In order to do this a number of important ingredients are listed, described and rated according to a toxicity rating chart in which a 1 rating is practically non-toxic and 6 is super toxic. Even more important is a trade name index section of 832 pages which lists trade named items and where possible gives formulas for the products or indications as to their composition. This section is followed by another on general formulations which gives more or less typical formulas for cosmetic and household specialties. From the technical point of view, there is much in this book that will help the formulator in a duplicating job or in providing information about competitive products before the initiation of research.

Tetracycline Compound Patent

U. S. Patent 2,791,609 has been issued to M. A. Kaplan of Bristol Laboratories covering the new tetracycline phosphate complex now being sold by the company as Tetrex. The compound is said to be absorbed more rapidly from the G. I. tract and to provide higher blood levels of tetracycline, making the antibiotic a more efficient therapeutic agent.

Viadril (Pfizer), 21-hydroxypregnane 3, 20-dione hemisuccinate sodium salt, is a steroid anesthetic now available for general medical use. It is being supplied in 100ml. vials containing 500 mg. of the steroid compound along with sodium carbonate and sodium chloride. A one per cent solution is made up before use with sterile water, sterile isotonic saline or five per cent sterile dextrose.

Aluminum Aspirin

for inclusion in N. F. XI. It seems to have significant pharmaceutical advantages over acetylsalicylic acid. It is relatively insoluble, so that it may more easily be made palatable for pediagric purposes; at neutrality, it is relatively inert chemically and does not develop the astringent taste or acetic odor of aspirin. It has a wider compatibility range than has aspirin. It is a white to off-white powder, odorless or with very slight odor. It is insoluble in water and organic solvents, but soluble, with decomposition, in aqueous solutions of alkali-metal hydroxides and carbonates. According to proposed specifications, the compound should contain not less than the equivalent of 80 per cent of acetylsalicylic acid calculated on the anhydrous basis, corresponding to not less than 90 per cent of $C_{18}H_{15}A10_9$. *Drug Standards*, 25:58, 1957

Alkylolamides

Although water-soluble coconut alkylolamides have become the most important type commercially, derivatives made from other fatty acids and two moles of diethanolamine have also been used quite extensively in cosmetics, textiles, and other applications. In addition, according to J. Kritchevsky of Ninol Laboratories (*J. Am. Oil Chem. Soc.* 34:178, 1957), alkylolamides of a simpler type, made by reacting equimolar quantities of fatty acids and monoalkylolamines, such as monoethanolamine or isopropanolanine, are also in wide use. Depending on the fatty acids and amines used, the alkylolamides vary considerably in physical form. In general, the highest fatty acids and the monoalkylolamines tend to give the hardest waxes.

The properties of the alkylolamides are somewhat dependent on the exact grade of raw materials used and the nature of the heating cycle. For example, the viscosity in water will depend on whether a whole coconut fatty acid or a stripped acid is used and on exactly how far the condensation is carried.

To some extent this results from the fact that these amine condensates are rather complex mixtures. Both ester amines and ester amides as well as amides can be formed, and cyclization to form piperazines is also a possibility. In practice however a 2:1 type of lauric diethanolamine condensate, when properly prepared, is found to contain about 65 per cent of true diethanolamide, and practically no ester amine or piperazine, though there may be a few per cent of ester amide

Recently a new process for producing alkylolamides by ester interchange has come into use. This involves reacting 1 mole of a fatty acid methyl ester with only 1 mole of diethanolamine under special conditions. These products, which can be described as the "1:1 Type," contain very little excess of diethanolamine and have true amide contents of over 90 per cent. As might be expected, they are not very water-soluble but can be used in blends with other detergents wher they become solubilized.

The water-soluble alkylolamides can be considered essentially nonionic in behavior. Where the condensation has been carried close to completion, these products appear entirely compatible with both cationic and anionic surfactants over a wide pH range.

If the condensation reaction is not carried all the way, then a certain amount of amine soap is present, and this destroys compatibility with cationics.

The only truly water-soluble members of the series are the condensation products of C_{10} or C_{12} fatty acids with 2 moles of diethanolamine. All the other possible combinations using monoethanolamine, isopropanolamine, and various fatty acids are not water-soluble. Most of the alkylolamides are soluble in ethanol although some types, such as monoethanol stearamide, are not except in the hot.

Several of the higher fatty acid amides are soluble in kerosene, particularly the oleic derivatives. Surprisingly the condensation product made by heating equimolar amounts of coconut fatty acid and DEA is kerosene-soluble whereas the corresponding ones made from monoethanolamine and isopropanolamine are not. This is belived to be caused by a high degree of ester amide formation under these conditions in the case of DEA. Such products make excellent water-in-oil emulsifiers.

One of the outstanding properties of the alkylolamides is their viscosity in fairly dilute, aqueous solutions. Thus 2 per cent or 3 per cent solutions of the 2:1 type coconut diethanolamide in destilled water have viscosities of 200 cp. or more. No other commerical surfactant exhibits this behavior, which is limited to the C_{12} diethanolamides. Capric diethanolamide is not as viscous, and the higher amides are insoluble.

As might be expected, the alkylolamides can also be used to thicken solutions of other surfactants, and, in fact, this is an important commercial application of these products. It is now well known that alkyl aryl sulfonates and even lauryl sulfates produce foams that are unstable in the presence of greasy soils. The addition of alkylolamides has been found greatly to increase the foam stability of these products, with the lauric diethanolamides being probably the most effective.

As the molecular weight of the fatty acid increases, the foam-stabilizing action of the diethanolamides decreases, and some of the amides of higher acids can even act as foam depressants.

The unusual properties of the alkylolamides, such as their thickening, foam stabilizing, and rust-inhibiting action, have tended to divert attention from their detergent properties.

Actually the water-soluble alkylolamides are excellent detergents and exhibit much better cleaning action than the alkylaryl sulfonates, for example.

Addition of an alkylolamide to the alkyl aryl sulfonate enhances detergency considerably.

In addition to boosting suds, the alkylolamides markedly increase the cleaning action of the alkyl aryls since these nonionic detergents possess excellent soil-removal properties. Numerous studies have demonstrated the value of the alkylolamides for scouring wool or washing cottons in textile plants.

The cosmetic industry is a large user of alkylolamides. Several different types are used as thickners for the popular lauryl sulfate synthetic shampoos to produce the desired viscosity. In addition, they improve flash foam and impart a degree of hair conditioning. Other amides are used in liquid cream shampoos as opacifying and pearlescing agents and in clear coconut soap shampoos to improve the rinsability. The addition of alkylolamides to aerosol shave creams appears to lend crispness to the lather produced.

Certain oil-soluble alkylolamides form very stable water-in-oil emulsions and are therefore used in such items as pharmaceutical absorption bases, dry-cleaning coaps, and fuel-oil additives.

Protein Complex Films

The following are formulas suggested by B. F. Goodrich Chemical Company as deodorant and astringent preparations which have the property of leaving a deposit which in the presence of skin protein tends to form a transparent, adherent film is easily removed by washing with soap. The K-702 is a 25 per cent solution of polyacrylic acid in water.

Ethyl alcohol	40
Water	32
K-702 solution	24
$Al_2(SO_4)_3.18\,H_2O$	4

Add perfume and hexachlorophene for bacteriostatic action.

Ethanol	18.7
$Al_2(SO_4)_3.18\,H_2O$	0.6
Sorbitol	9.0
Water	67.3
Perfume	0.4
K-702 solution	4.0

Since the films formed are said to be insoluble in water but removable with soap in water, solutions along these lines might well be especially useful in formulating suntanning preparations and possibly even in wave sets.

Isopropyl Esters

Isopropyl myristate and palmitate are colorless, oily, fluid and almost odorless liquids with the following constants:

Specific gravity	0.85—0.86
Ester Value	98 per cent minimum
Acid Value	0 to 0.1 per cent
Iodine Value	1.0 maximum
Solubility in 90 per cent alcohol	3 per cent

The esters are non-irritating, absorbed by the skin, promote penetration of other ingredients, and resist hydrolysis and oxidation.

They can be used for superfatting toilet soaps and as shampoo additives; the myristate helps to "couple" castor oil and mineral oils and waxes; they are good solvents for perfume oils and are readily emulsified. The esters improve the texture of lipsticks and assist dispersion of color and are completely miscible with vegetable and mineral oils.

The following formulas illustrate applications of the isopropyl easters

Stearic acid	100
Mineral oil	400
Isopropyl palmitate	60
Lanolin	20
Cetyl alcohol	20
Propylene glycol	50
Triethanolamine	10
Water	340
Isopropyl myristate	20
Cetyl alcohol	10
Glycerin	20
Triethanolamine	6
Water	764
Beeswax	160
Mineral oil	450
Isopropyl myristate	50
Triethanolamine	10
Water	330

Karl Bergwein, *Dragoco Report*

Bithionol

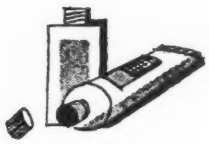
Bithionol U. S. P., 2,2′-thiobis-(4, 6-dichlorophenol), a bacteriostatic agent for use in soaps, shaving creams, shampoos and other cosmetics and pharmaceuticals, is now being offered by the Catalin Corporation of America, New York, N. Y.

Sheftene Products

A division of National Dairy Products Corporation, Inc., announces the availability of the Sheftene Series of concentrated milk proteins for nutritional supplementations of cereals, flour, pharmaceutical, infant food and geriatric diet preparations.

Products in the series are Sheftene C2 Edible Casein Flour (soluble form), Sheftene C2 Edible Casein, Sheftene Calcium Caseinate and Sheftene 60. All four products are high in protein content (up to 90 per cent), and provide all eight essential amino acids in proper balance.

A new brochure entitled "The Sheftene Family of Milk Proteins. . . and their advantages as Natural Nutritional Supplements," is available on request. The data includes, in condensed form, results of new nutritional studies and a general description of the Sheftene products and their applications.



Advancing Therapy

Headache Treatments

This paper by A. P. Friedman and H. H. Merritt (*J.A.M.A.*, 163:1111, 1957) reviews experiences with over 5,000 patients during 10 years and evaluates the therapeutic agents used. A completely accurate method of evaluating drugs used in the treatment of headache is unknown. The best method of drug evaluation is the use of the double-blind technique, in which a placebo and two or more therapeutic agents are administered to a group of untrained subjects. The drugs commonly used in the treatment of headache can be grouped into several categories: analgesics, sedatives, anticonvulsants, stimulants of the central nervous system, drugs acting directly on the blood vessels—vasodilators and vasoconstrictors, histamine and antihistamine agents, diuretics, vitamins, hormones, and drugs acting on the autonomic nervous system. There of drugs used in the treatment of headaches. A partial list of the drugs that we have used, either alone or in combination, includes: analgesics—acetylsalicylic acid, acetophenetidin, and codeine sulfate; sedatives—amobarbital sodium, phenobarbital, isobutylallylbarbituric acid, chlorpromazine, meprobamate and reserpine; anticonvulsants — diphenylhydantoin sodium; stimulants of the central nervous system—dextro amphetamine sulfate and caffeine; vasoconstrictors—ergotamine tartrate, dihydroergotamine, isometheptene, and cyclopentamine hydrochloride; vasodilators—aminophylline, nicotinic acid, amyl nitrite, and papaverine; histamine; antihistamines — chlorprphenpyridamine maleate and tripelennamine citrate; diuretics—acetazolamide and ammonium chloride; vitamins—thiamine hydrochloride, cyanocobalamin, and ascorbic acid; hormones—testosterone propionate and estradiol benzoate; antispasmodics—belladonna alkaloids; and drugs affecting the autonomic nervous system—dihydrogenated ergot alkaloids and neostigmine methylsulfate.

The most practical and useful analgesics used in the treatment of headaches are the antipyretic coal-tar derivatives, such as acetylsalicylic acid and acetophenetidin. Given in therapeutic doses, these drugs do not cause mental disturbances, anesthesia, or changes in the level of sensation. The types of pain relieved by the antipyretics are of low intensities, such as those complained of by the sufferer from occasional headache or from those associated with mild periods of stress, physical or emotional. The administration of combinations of analgesic drugs does not have an additive effect, the ultimate threshold being that of the most active component. Analgesics do not potentiate the hypnotic action of the barbiturates, but the barbiturates potentiate the action of analgesics.

The addicting or opiate analgesics are used for the relief of severe pain as well as for their sedative action. However, the use of the morphine or synthetic drugs, such as meperidine hydrochloride, methadone hydrochloride, and others, is not indicated in the treatment of chronic headache because of the possibility of addiction.

Codeine possesses much less analgesic potency than does morphine, but it is an effective, relatively safe analgesic drug for the treatment of severe headache. Although both tolerance and addiction from continuous use have been recognized, these conditions are uncommon. Combined with acetylsalicylic acid, codeine is a common remedy for many types of headache, but it is of little value in the treatment of migraine at the height of an attack.

As ordinarily used, the hypnotics and sedatives cannot control the pain discomfort of severe or persistent headache, and they are usually combined with analgesics to be effective.

Reports published to date on the value of chlorpromazine, reserpine and meprobamate in the treatment of headache are too limited and the studies lack sufficient controls for effective evaluation.

A small number of patients with migraine respond well to methylphenylethylhydantoin or diphenylhydantoin.

The most common stimulants of the central nervous system used in the treatment of headache are caffeine and amphetamine. When dextro amphetamine is combined with one of the salicylates, they make an effective analgesic-stimulant combination. Dextro amphetamine sulfate is of value in the treatment of headache due to hangover.

Caffeine is employed alone in the treatment of post-lumbar headache and is combined with an analgesic such as salicylate in the treatment of the ordinary headache. Caffeine in combination with acetylsalicylic acid, acetophenetidine and isobutylallylbarbituric acid is one of the most effective medicaments for the symptomatic treatment of headaches due to tension. In combination with ergotamine tartrate, caffeine is effective in the symptomatic treatment of migraine.

Antihistaminics, such as chlorpheniramine maleate, are of value in a limited number of patients with headache. These patients usually have headaches associated with an allergic manifestation, such as vasomotor rhinitis. Dimenhydrinate has not proved effective in the treatment of migraine.

In spite of the negative experimental evidence, the use of various diuretics is worthy of trial in patients with a history of rapid weight gain prior to onset of headaches. Acid diuretic salts, such as ammonium chloride, urea, and a group of diuretics that have been introduced recently, such as acetazolamine have been used. The administration of acetazolamine has been reason-

ably successful in a small number of patients.

Vitamins, particularly nicotinic acid and cyanocobalamin (vitamin B_{12}), have been exceedingly popular agents in the treatment of headache. Experience with the administration of these vitamins in large amounts parenterally or orally in a large series of patients has been uniformly discouraging.

Endocrine therapy has at times occupied a prominent place in the treatment of headache. There are numerous reports in the literature of the beneficial effect of the administration of estradiol or testosterone propionate in the treatment of migraine, but the use of these hormones has not been of much value.

It has been considered that both migraine and tension headaches may be due to stress reactions; hence, the administration of cortisone acetate or corticotropin (adrenocorticotropic hormone) has been suggested in the treatment of these types of disorders. Occasionally these hormones will interrupt a histamine headache before its clinical termination, but otherwise we have not found them to be useful. Drugs that act on the autonomic effectors might be expected to be particularly effective in the treatment of vascular headaches. With few exceptions, however, these drugs have proved disappointing.

In the symptomatic treatment of 2,511 patients with migraine, ergotamine tartrate proved to be the most useful drug. The highest percentage (83 per cent) of patients with symptomatic relief is obtained by early and adequate administration of ergotamine and caffeine, alone or combined with antispasmodics and/or sedatives.

Symptomatic relief from headache due to tension was secured in 67 per cent of 1,082 patients. The most effective therapy was the administration of a combination of an analgesic, sedative, and caffeine (effective in 71 per cent). When used alone, analgesics or sedatives are less effective (56 per cent) than when used in combination. Attention is called to the relief obtained from the administration of placebos in 55 per cent of the patients.

The most effective symptomatic treatment of headache due to hypertension is the administration of analgesics, such as aspirin or codeine, in combination with a sedative. Although ergotamine tartrate may prove beneficial in ameliorating some hypertensive headaches, its use in hypertensive patients is not advisable. Antipressor drugs used for the reduction of blood pressure include the methonium salts, hydralazine hydrochloride, dihydrogenated ergot alkaloids, and Rauwolfia serpentina (reserpine). A study of the progressive series of patients for a period of 18 months indicates that the frequency and severity of attacks were decreased in 77 per cent by administration of reserpine. However, when these results are compared with the percentage relieved by the administration of a placebo (66 per cent), they are not so striking. Experience with reserpine indicates that it may reduce the frequency of headaches for a number of months, but in some cases this beneficial effect is not maintained.

Anti-Ulcer Glutamine

Glutamine, a naturally occurring amino acid, is giving promising results in the treatment of alcoholism and ulcers, according to W. Shive, who reported to the Division of Biological Chemistry at the 131st ACS National Meeting. Alcoholics fed glutamine do not seem to crave alcohol as much as untreated patients, while peptic ulcers seem to heal more rapidly when glutamine is administered than under conventional treatment. A group of 40 alcoholics were treated with glutamine; 20 patients were controlled, 11 improved, no change occurred in six and three were worse. When glutamine was fed to 24 ulcer patients who received no other treatment, 10 were healed in two weeks, eight in four weeks and the rest within eight weeks. In another test, 57 patients were divided among three groups. One group got glutamine alone; another group was treated with a usual antacid-antispasmodic combination plus a placebo and the third group received the conventional treatment plus glutamine. Glutamine alone was as good as or better than conventional treatment.

Prednisone in Asthma

Prednisone is a very effective drug in bronchial asthma according to S. J. Taub, M. A. Kaplan and A. L. Aaronson (*J. Allergy* 27:514, 1956) and shows marked anti-inflammatory action. It is about four to five times more effective, on a weight basis, than cortisone or hydrocortisone. Attention is called to the serious complications of adrenal insufficiency after stress phenomena and to the value of long-acting corticotropin to correct or offset this complication. The use of antibiotics in selected patients in whom an infectious component was suspected increased the effectiveness of prednisone or corticotropin in these patients.

Medicated Powder

Johnson & Johnson has announced the marketing of "Johnson's Medicated Powder". This new preparation consists of talc, kaolin, bentonite, hexachlorophene and para-chloro-meta-xylenol. According to the company, hexachlorophene is active against staphylococci and adheres to the skin to give long-lasting effect while the xylenol derivative is particularly active against streptococci. The powder is claimed to be virtually without irritation. Anti-enzyme action against bacteria responsible for ammonia formation and ammonia diaper rash is also suggested.

Tetracyn V (Pfizer) is tetracycline with sodium metaphosphate, each capsule containing 250 mg. tetracycline hydrochloride and 380 mg. sodium hexametaphosphate. The product permits the development of higher antibiotic blood levels, more quickly and is sold in bottles of 16 and 100 capsules.

Fergon (Winthrop) now contains ascorbic acid in addition to ferrous gluconate. The preparation is intended for the treatment of iron-deficiency anemias and is available in bottles of 100 Caplets.

Marsilid (Roche) is now available in two new strengths—tablets of 10 mg. and 25 mg. The psychic energizer is said to be particularly useful in the treatment of mental depression and each new size is available in bottles of 100 and 1000.

Dainite-KI (Irwin-Neisler) contains phenobarbital, aminophylline, ephedrine hydrochloride, ethyl aminobenzoate, aluminum hydroxide and potassium iodide for protection against asthmatic attacks. The preparation is made of three separate granulations: the orange particles are potassium iodide coated to release KI slowly to protect against gastric irritation; the aminophylline is yellow and uncoated and the pink particles contain protective factors to guard against gastric irritation caused by large doses of aminophylline. The tablets are available in bottles of 50, 500 and 1000.

Bidrolar (Armour) is intended for the correction and treatment of constipation. Each orange-colored coated tablet contains 2 3 grain of dioctyl sodium succinate and one grain of ox bile extract and the preparation is available in bottles containing 100 tablets.

Perfumer's Shelf

Citronellol and Geraniol

The isolation without isomerization of suitably purified preparations of geraniol, and of citronellol (rhodinol) starting from essential oils of geranium and rose, of linalol starting from those of geranium is facilitated by the use of modern analytical distillation columns according to Y.-R. Naves (*P. E. O. R.* 48:118, 1957). Vapor chromatography has not yet attained the stage of perfection which allows the isolation of suitable preparations for extensive analysis, but we are probably not very far away from it. It permits nevertheless, testing, on a very small sample for analysis, the purity of preparations of each of the isolated alcohols. The analysis is accordingly possible with 10 to 20g. of essential oil. The employment of liquid/solid chromatography would require much more product and be much longer.

The treatment of rose oil is comparatively easy; this oil contains few esters and the geraniol and citronellol (rhodinol) being its predominant constituents are easily separable from the small proportion of phenyl ethyl alcohol which accompanies them. The geraniol is accompanied by a small proportion of nerol which one detects easily by the study of the infra-red absorption spectra. The rotatory power α_D of citronellol (rhodinol) always exceeds—4°, when it relates to rose oil from Anatolia, Bulgaria, Provence and from Morocco. In any case the infra-red spectrography and microanalysis by ozonolysis indicate with certainty the presence of α-citronellol, α-geraniol or of α-nerol.

The treatment of geranium oil is less easy since on the one hand the composition of the alcohol fraction is more complex: one has detected here (middle fraction) besides geraniol and citronellol (rhodinol), phenyl ethyl alcohol, α-terpineol, borneol, menthol in proportions not negligible, and all the alcohols are accompanied by their esters, especially formates and acetates in more or less high proportions. Also it is often advantageous previously to hydrolyze the esters, which does not cause perceptible isomerization, and to then distil.

Under these conditions the author has not observed (by infra-red spectrography) that geraniol, any more than the intermediate fractions distilling between the pure fractions of citronellol (rhodinol) and those of geraniol contain nerol and has detected the isomer α-neither in linalol or in citronellol (rhodinol) or in geraniol.

The comparative examination of the free alcohols and of the alcohols resulting from the hydrolysis can be interesting in several ways.

The proportions of citronellol (rhodinol) and of geraniol in the free alcohols and in the esterified alcohols are the same for each of the alcohols. It was interesting to go farther and to study the distribution of the optically active and racemic citronellols (rhodinols).

In these experiments the free alcohols have been isolated by exchange with the n-butanol of n-butyl triborate and repetition of the treatment on the isolated citronellol (rhodinol) and on the optically active linalol the treatment does not cause perceptible racemization.

It is highly probable, if only on account of the high content of formic esters in the geranium oils, which are easily hydrolyzable, that a fraction of the free alcohols has been produced after the collection of the plant at the expense of the esters.

We know in essential oils the limiting case of the oil of petitgrain in which the free linalol is almost entirely racemized while the linalol combined as the acetic ester is the pure levoisomer. On the other hand, clary sage furnishes an example of almost equal distribution of active and racemic linalol. It seems then that in the geranium like clary sage the alcohol in question is produced independently of its esters and that its elaboration continues in the less young tissues after that of the esterification has ceased or has been at least strongly retarded, yielding the racemic isomer in increasing proportion referred to the active isomer. The young tissues are those where the proportion and quantity of esterified alcohols are the greatest.

Pharmaceutical Flavors

In a paper presented before the Practical Section of the American Pharmaceutical Association in New York, April 1957, Fred Wesley of the Fritzsche Brothers Flavor Research Laboratory, analyzed the frequency of flavor types in pharmaceutical preparations. The major groups of flavored pharmaceuticals were vitamin preparations, antibiotics, cough preparations, sulfas and sulfa-antibiotics. These major groups represented 65 per cent of all preparations. Major flavor types by frequency of appearance were cherry, fruit, orange, raspberry, chocolate and mint.

Aubepine

Aubepine is a colorless to pale yellow oil having a melting point of about 0° C., specific gravity at 25° C. 1.119-1.122, refractive index at 20° C. 1.571-1.573, free of chlorine, soluble in five volumes of 50% alcohol, bisulfite solubility 99% minimum, and acid value 5 maximum at time of shipment.

Like most aldehydes, Aubepine is

somewhat prone to oxidation upon exposure to air, but the tendency is not nearly so great as is generally thought and it can be further suppressed by the use of proper antioxidants. Even the presence of other aromatics, especially alcohols, reduces the tendency to oxidation. It does not discolor, except in the presence of amines or indole.

As might be expected, Aubepine is the principal constituent of every hawthorne type of odor. It plays an important role in the formulation of such florals as heliotrope, clover, new-mown hay, fougere, lilac, wallflower, acacia and sweet pea. In minor proportions it is useful for the creation of special effects in violet, mimosa, mignonette, magnolia and cyclamen odors. Among soap perfumers it is especially esteemed for its powerful fixative properties. It is used to a limited extent in such flavors as raspberry, strawberry, grape, pineapple and others.

Beyond its use *per se* as an aromatic, Aubepine can be converted to various derivatives which find application in perfumery, such as acetals, the acetone condensation product, anisyl alcohol, useful in the blending of lilac and jasmin compositions, anisyl formate, for special effects in heliotrope, lilac, tuberose and jasmin types, and anisyl acetate, effective in lilac, honeysuckle, violet and gardenia bouquets—M. S. Carpenter, The Givaudanian.

Propionates and Butyrates

Linalyl propionate, with its full, sweet bergamot odor has obvious applications in eau de Cologne, chypre, fougere, origan, etc. It also has something in common with clary sage, lavender and opopanax, on the one hand, and jasmin and lily on the other.

Terpinyl propionate, with its somewhat fruity lavender odor, is widely used in artificial lavenders. Geranyl propionate has a honeyed rosaceous note that comes up well in certain rose, gardenia and other flower perfumes, as well as in the lighter exotic and eastern types.

The sweet flowery character of Linalyl butyrate deserves a much more extended application in modern perfumes. In artificial bergamot, however, its definitely buttery undertone can easily be employed to excess. In chypre, lavender, fern and fruity-floral bouquets it can give most admirable effects.

Useful in rose, rose-geranium and toilet water perfumes generally is the sweet, floral-fruity and slightly ambered odor of citronellyl butyrate. The following isobutyrates are also of considerable interest: Phenylethyl iso-butyrate (in rose, orangeflower and jasmin blends, spring flower and light spicy bouquets, cream perfumes); p.-cresyl iso-butyrate (anise-ylang odor, useful in ylang, narcissus, etc.); and octyl iso-butyrate. Octyl butyrate occurs naturally in male fern and parsnip. It has a low, earthy note, reminiscent of wet fields, combined with a certain fruitiness. E. S. Maurer has suggested its use in woody, chypre, fern and tobacco types of perfume.—*S.P.C.*, 30: 407, 1957.

Eugenol and Isoeugenol

Since about 1876 it has been known that clove oil contains upwards of 85 per cent of eugenol, and smaller amounts, down to mere traces, are present in such oils as cinnamon-leaf, myrrh, nutmeg, patchouli, and some of the magnolias. A few years later, in 1892, iso-eugenol made its appearance, and in this isolate, even in its concentrated condition, we have the Carnation nuance *par excellence*.

Strangely enough, this isolate does not seem to be reported as a constituent of the natural carnation oils, but in combination with the alkyl benzoates and salicylates, together with the cresol ethers, it plays a very important part in the build-up of the Cananga-type fragrance.

It must not, however, be overlooked that iso-eugenol, which is very easily oxidized to vanillin, may be present as a precursor in some blossoms.

The proportional balance of the eugenols and their methyl ethers in the simulation of carnation compounds is largely a matter of personal opinion. Quite modest amounts of the eugenols, when well backed by rose and a trace of spicy base, acquire the sweet, mellow characteristic of the evening emanation of the living plant.

Carnation bases for soaps, cosmetic preparations and fantasy bases may be constructed upon a liberal foundation of the eugenols. Osmical compatibility is somewhat limited, but the most attractive combinations for initial consideration are Carnation-jasmin with muguet, rose and violet respectively; Carnation-ylang-violet and Carnation-lavender-geranium. For fancy compositions, better results follow the gradual extension of the selected base by the addition of the eugenols, their ethers and esters, rather than the incorporation of a finished Carnation compound, as the latter invariably upsets the component balance, resulting in toneless mixtures—E. S. Mauver, *S. P. C.*, 30 315, 1957.

Flavoring Therapeutic Diets

A major problem of diet therapy is unpalatability of the diet, with consequent lack of patient cooperation, according to an editorial in *J.A.M.A.* Diets can be made more palatable by providing for the use of a wide variety of acceptable seasonings. The report of Elvehjem and Burns to the Council on Foods and Nutrition of the American Medical Association drew attention to the role spices could play in this regard. The report consisted of a study of the sodium content of commercial spices and suggested their use in the preparation of sodium-restricted diets. Following closely on this report came the recommendation of a committee of the American Heart Association of a long list of acceptable seasonings for use in both sodium-restricted and calorie-restricted diets for cardiac patients The list included, in addition to spices and herbs, such other flavorings as lemon juice, vinegar, vanilla, saccharin, cyclamate, onion, and garlic A longer list is recorded in a report of a committee of the Food and Nutrition Board, National Research Council.

More recently, Gray and co-workers reported a study on the effect of spice ingestion on the healing time of peptic ulcer.

The spices tested included cinnamon, nutmeg, allspice, thyme, sage, paprika, caraway seed, chili pepper, cloves, black pepper, and mustard seed. Symptoms developed in only five patients in this group during the administration of spices: two with administration of black pepper, one with chili pepper, one with nutmeg and one with ground mustard seed.

These studies suggest that some of the milder spices may be used in moderation to improve the flavor and acceptability of therapeutic diets, even in patients with peptic ulcer.

Comment: These studies suggest further enlargement of the field of cooperation between pharmaceutical manufacturers amd suppliers of flavor compounds with the use of spice principles rather than the spices themselves, as well as many other concentrated flavor oils available for food and confectionery. With the many compounds available to formulators, these diels can certainly be made interesting and palatable, if not down-right attractive, and the market should be large enough to warrant the effort.

Skin Research

Pharmacology Review

Carrie found no difference in protection of the skin between various commercial preparations and the frequently used ointment bases eucerine and ung. lanette. Denton et al. tested commercial silicone-containing skin protectives, white petrolatum and ten non-silicone-containing preparations as barrier agents against a variety of challenging liquids by a laboratory method. White petrolatum, U.S.P. grade, was as good a barrier ointment as the best commercial silicone and non-silicone skin protective ointment used in the study. Robinson gives a survey of the pharmaceutical and biological properties of official and non-official ointment bases. Shelmire found that certain types of oil-in-water emulsions were unique as a barrier to loss of water contained in callus. This property was not shown to any extent by water-in-oil emulsions or greases. Blank, Shapiro reported that after soaking in water or synthetic detergents, thin sheets of callus are less flexible than before soaking. Soaking in water did not reduce the water-holding capacity of cornified epithelium very much. Soaking in soap solutions reduced the water-holding capacity as much as did soaking in synthetic detergents solutions. Ephraim described a new method of overcoming the disfiguring properties of therapeutic dyes. The desired colour shades can be obtained by combination of all four dyes (gentian and methylviolet, brilliant green and basic fuchsin). Flesch et al. described methods for studying the penetration of topical agents through dead human skin. These in vitro tests include spot tests in the corium, sulfhydryl determinations in the isolated epidermis and colorimetric estimations in dermal extracts. Gant recommended polysorb hydrate (a hydrated ointment base consisting of sorbitan sesquiolate in a wax-petrolatum base) as a specially formulated water-in-oil system to provide optimal limits of water to prevent drying of the abraded skin at the same time that the integrity of the lipoid phase exerts its protective action. Appel et al found that neo-zinc oxide hyperfine, a new form of chemically pure zinc oxide, combines pharmaceutically as easily in all formulations as does white zinc oxide but is cosmetically as effective a skin cover as the usual cosmetic preparations. Its color is moderate orange pink. Sternberg found a combination of 57 per cent "Freon 12" (dichlorodifluoromethane) and 43 per cent "Freon 114" (dichlorotetrafluoroethane) to be most effective as a refrigerant in surgical skin planning.

Livingood et al. showed that percutaneous absorption of fluorocortisone may occur following topical application of the drug. Fitzpatrick et al. reported that the principal factors that promote percutaneous absorption of fluorocortisone acetate are the drug, the stage of the dermatitis, and the frequency of application. It occurs more with fluorocortisone acetate in a lotion vehicle. Haxthausen compared the activity of 9α--fluorhydrocortisone acetate and hydrocortisone acetate in 2½ per cent ointment, by topical application on electrophoretically induced eczematous reactions. He found the fluor compound to be the most effective in suppressing the eczematous reaction, but the effect was not constant and rarely complete. Scott, Kalz demonstrated, 1 hour after topical application of C^{14} hydrocortisone in human skin, radioactive material in the epidermis. By 2 hours the traces material had concentrated in the basal layer, after 6 hours it was identified in the cutis around blood vessels, whilst it had dissappeared entirely from the skin after 16 hours. Malkinson, Ferguson showed percutaneous absorption of hydrocortisone through normal skin by detection of radioactivity in the urine following topical application of hydrocortisone—4-C^{14} incorporated into an ointment base. Smith found no significant change in the urinary 17-ketosteroids and 17-hydroxycorticosteroids, after 10 g. of ointment containing 250 mg. of hydrocortisone was rubbed into normal skin areas of human volunteers. Gemzell et al. studied the effect of 200 mg. hydrocortisone, applied locally to the skin, on the eosinophil count and plasma level of 17-hydroxycorticosteroids. It is concluded that hydrocortisone has some internal effect. Kalz, Scott evaluated various ointment bases of hydrocortisone. It appeared that individual choice of the base taking into account type and localization of the skin disorder, is prerequisite for optimal therapeutic results. Frank, Stritzler reported that topical prednisolone is less effective than a hydrocortisone ointment. Hirsch reviewed the pharmacological aspects, uses, and contraindications in dermatology of adrenocortical steroids, their derivatives and corticotropin.

Rademacher, Montagna studied the response in mice to the application of methyl ether of vitamin A and vitamin A palmitate. Ther esults show that these two compounds did not inhibit—SH groups or keratinization in the mouse. Sobel showed the percutaneous and oral absorption of vitamin A. Histologically the most benign medium for the percutaneous absorption of vitamin A was a wool-fat-petrolatum-based cod liver-oil preparation. Geimer gives a detailed review of the therapeutic and pharmacodynamic properties of biotin (vitamin H) and its intradermal use in a few dermatoses. Grover described six patients in whom diffuse hair loss was noted after the use of a selenium sulfide shampoo. Hagmuller et al. studied quantatively by means of estimations of the activity of the thyroid gland in rats the percutaneous resorption of iodine and iodide. Hu et al. evaluated the comparative toxic effects of 20 compounds, including chemicals, antibiotics, antihistaminics, local anaesthetics, and antiseptics to the human

skin by means of the "roller tube tissue culture technic". The most toxic ones were mercuric bichloride and potassiumdichromate, whereas neomycin in a concentration as high as 20,000 mg. for hours caused no injury to the growing epithelium. Brun et al. studied the mitosis-stimulating capacity and the acanthogenic action of various ointment bases on the nipple and on the skin of the flanks of guinea pigs. A silicon product and an ointment base showed neither of these characteristics. Goldblum et al. studied the effects of paraaminobenzoic acid, sulfanilamide, gantrisin, 8-methoxypsoralen and atabrine upon the sulfhydryl and disulfide levels of human serum. The effects of ultraviolet light irradiation and the combined effects of these drugs and irradiation upon sulfhydryl and disulfide levels are reported.

Enderlin, Brun tested 42 substances with regard to their wheal-forming action. Ten out of 19 drugs producing wheals on each person tested were parasympatholytics.

Physical Processes

Meirowsky demonstrated the crystalline structure of melanin, keratin, and collagen by polarization, ultrasonic waves, and application of hydrogen peroxide. The crystals of melanin, keratin, and collagen were identified cytologically as primary structures and designed protomers. Perry et al. studied the effect of order of the injection of atropine, pilocarpine and placebo on the galvanic skin resistance in 24 human subjects. The observed drug effects were independent of the order of administration. In other article they compared the effects of drugs (Metacholine, atropine, methantheline, epinephrine, and placebo) in sympathectomized and non-sympathectomized areas on the galvanic skin response level of human subjects. For the most part the findings support the theory that the galvanic skin response is related to sweat gland activity. Cornbleet showed that redox potentials induced on a localized site of the skin spread rapidly to distant parts and envelop the entire integument. Possible avenues for the induction of the sensitization process arediscussed. Kanof found exprimentally produced second degree tehermal burns intensified by the hydrocortisone applied locally 5 minutes and 5 hours after burnng. No alteration of the erythema response of skin to ultraviolet rays was observed if inunctions with hydrocortisone were performed after irradiation. Cohn showed that chloroquine produces its effects by modifying the reaction pattern of the patient with polymorphous light eruption in a manner which suppresses the abnormal but not the normal responses to ultraviolet light in the sunburn spectrum. Shirren showed that the pH values on the skin surface obtained with glass and quinhydrone electrodes were the same. Sigel described a method for measuring skin threshold sensibility with square wave current. It was found that females tend to have a lower sensibility threshold inde. Beilicky proposes a method of investigation which makes it possible to measure the cohesion of the layers of the skin by means of suction. R. Kooij, *Dermatologica*, 114:70, 1957.

Triacetin Fungicide

S. G. Knight, writing in *Antibiotics and Chemotherapy*, 7:172, 1957, investigated in the laboratory the spectrum of triacetin activity against fungi and attempted to elucidate the mechanism of its action. *In vitro* studies showed that in general growth of trichophyton and microsporum fungi was inhibited by concentrations of triacetin greater than 0.1 per cent; the yeast, candida albicans was only partially inhibited at 0.5 per cent. Serum enhanced the fungistatic activity. The assumption of mechanism is based upon the hydrolysis of the triacetin to liberate acetic acid in the presence of esterase.

Nonionic Surfactants

Nonionic surfactants discussed by C. E. Stevens of Antara Chemicals (J. Am. *Oil Chem. Soc.* 34:181, 1957), have certain advantages as compared with anionic compounds. As is implied by the name, the performance properties of the nonionics are less affected by the nature and concentration of electrolytes in dilute aqueious solutions than are those of the anionics.

Another advantage of ethylene oxide in conferring water solubility on hydrophobes is that any desired degree of solubility can usually be attained. In contrast the solubilizing power of the sulfate or sulfonate group is fixed, and the molecular weight of the hydrophobe must be modified in order to obtain sulfates or sulfonates with a specifically desired solubility in water.

Another advantage of ethylene oxide as a hydrophile is that the product obtained in the reaction vessel is essentially 100 per cent active, salt-free, and lighter in color than the starting base. Consequently there is no need for relatively expensive purifying and drying operations.

One disadvantage of nonionics as compared with anionics is that a full range of hydrophobic-hydrophilic balances is not available as 100 per cent-active solids.

Another disadvantage of the presently available nonionic surfactants is that none of them forms copious and stable foams as compared with the better-foaming anionics. Neither is it possible to build the foam of nonionics as easily as it is to build the foam of anionics.

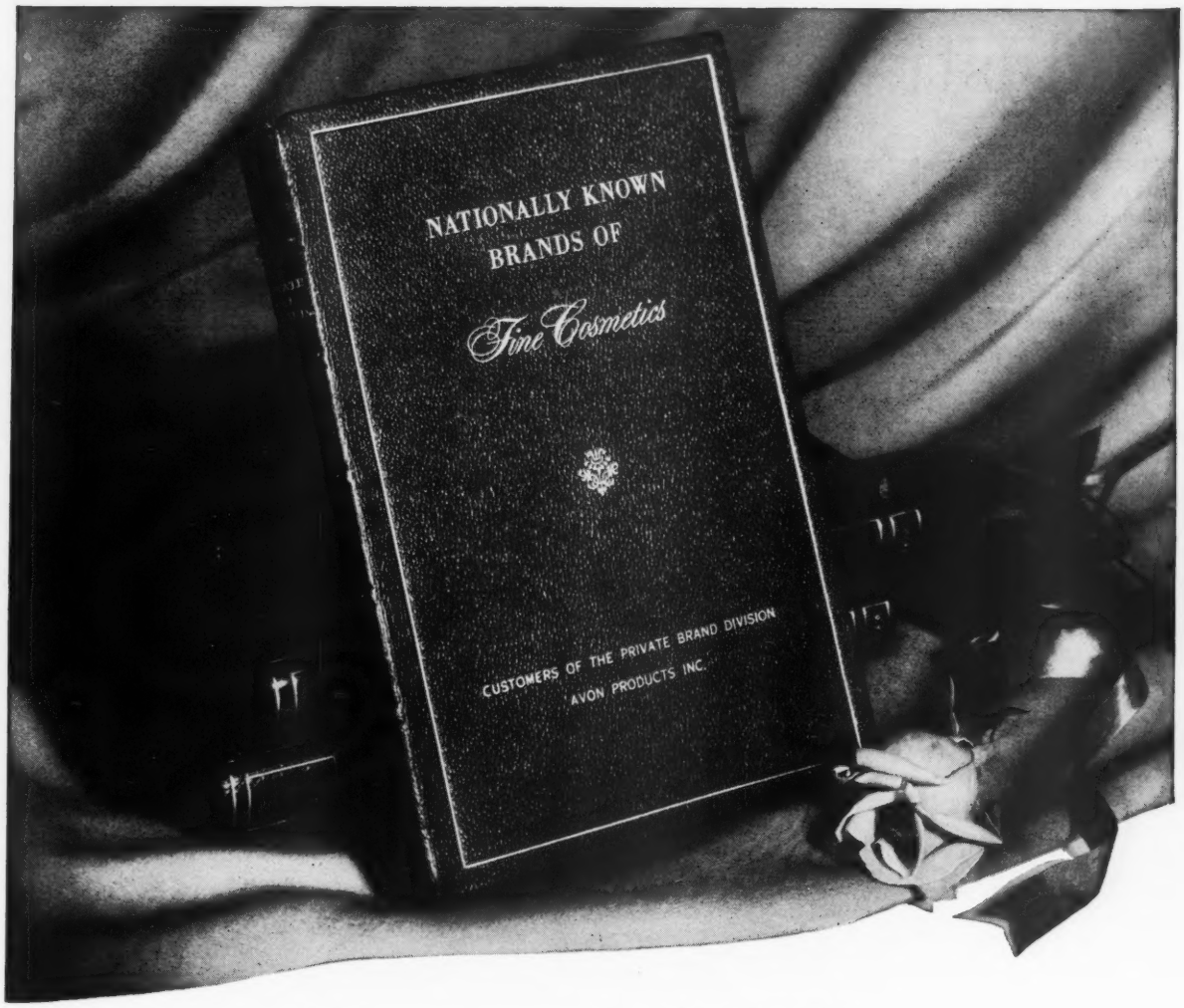
Nonionic surfactants are being used in an increasing variety of industrial processes as well as in a wider range of consumer products. Present usage of nonionic surfactants is primarily in aqueous solution and utilizes the wetting, detergent, foaming, dispersing, or emulsifying properties of these products. In many instances it is advantageous to use nonionics in combination with anionic, cationic, or amphoteric surfactants.

Household products which contain appreciable percentages of nonionics include heavy-duty detergents, light-duty detergents, shampoos, cosmetics, pesticide sprays, rug and upholstery shampoos, waxes, polishes, paints, and special-purpose cleaners.

Silicote Liquid Spray Skin Protective (Arnar-Stone) is a companion product to Silicote Ointment. It is a 3 oz. aerosol spray can containing 33 1/3 per cent of silicone (dimethicone) in a specially prepared petrolatum base for skin protection against contact irritants and to promote healing of chapped, irritated or macerated skin. (See D.C.I. July 1956, p. 101 for suggestion of a baby aerosol virtually identical with this preparation.)

Tashan (Hoffmann-LaRoche) is a cream recommended for the symptomatic relief of various skin irritations. Each gram contains, in a vanishing cream base, 50 mg. panthenol, 10,000 units vitamin A, 1000 units vitamin D and 5 mg. vitamin E. It is available in one pound jars and one ounce tubes.

Achromycin V Syrup (Lederle) is a non-allergenic orange-flavored and colored syrup containing in every 5 cc. teaspoonful 125 mg. of tetracycline along with sodium metaphosphate to enhance systemic absorption of the antibiotic. The preparation is available in 2 ounce and 16 ounce bottles.



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Industry's Books . . .

The Encyclopedia of Chemistry, *Editor-in-Chief George L. Clark, Research Professor, University of Illinois, Managing Editor, Gessner G. Hawley, Reinhold Book Div., Advisory Editor, William A. Hamor, Director of Research, Mellon Institute, 1037 pp., Reinhold Publishing Corp., New York, (1957), cloth,* **$19.50.**

This is a very complete, one volume encyclopedia centered around the subject of chemistry and including over 20 different sciences that border on chemistry. Between "Abrasives" and "Zirconium" are 1,000 pages of condensed, authoritative and clearly presented information designed for the needs of chemists, engineers and scientific workers in all fields. A wealth of information is contained in this work for those who seek to understand current seientific events by referring to such topics as atomic power, automatic control, electron tubes, radioactivity, new elements, plastics, antibiotics, amino acids, allergy, air pollution, safety, packaging, and hundreds of similar topics. All branches of chemistry—pure and applied, chemical engineering, and pertinent related fields—are completely covered.

Organic Synthesis *Vol. 1—Open-Chain Saturated Compounds, Vol. 2—Open-Chain Unsaturated Compounds, Alicyclic Compounds, Aromatic Compounds, 1822 pp., Reinhold Publishing Corp., New York (1957), cloth Set,* **$35.**

This monumental work is so complete and so precise in its coverage that it surpasses even specialized texts in each and every phase of this vast field. Great emphasis is put on the later advances, including reactions like halogenation, nitration, sulfonation, and diazotization. Chapters dealing with the loefins and acetylenic compounds are complete essays in themselves on these timely subjects, and more inclusive than any previous exposition. The book also deals concisely with information on sterols, carotenoids, vitamins, peptides, carbohydrates, terpenes, azulenes, and topolones. This is the first general reference which accords full details to these comparatively new fields. Standard methods are completely covered, and with a new approach.

Heterocyclic Compounds, Vol. 6, *Edited by Robert C. Elderfield, University of Michigan, 753 pp., John Wiley & Sons, Inc., New York, (1957), cloth,* **$25.**

Vol. 6 of this work presents the chemistry of the six-membered heterocycles containing two hetero atoms and their benzo derivatives. Contents: Chapters 1. The Chemistry Of The Monocyclic Dioxanes—Kremer and Rochen. 2. Benzodioxanes—Elderfield. 3. Sulfur Analogs Of The Dioxanes—Elderfield. 4. Pyridazines—Jacobs. 5. Cinnolines And Related Compounds—Jacobs. 6. Phthalazine And Its Derivatives—Elderfield and Wythe 7. Pyrimidine And Its Derivatives—Kenner and Sir Alexander Todd. 8. The Chemistry of Quinazoline – Williamson. 9. The Pyrazines and Piperazines—Pratt. 10. The Quinoxalines Pratt. 11. The Monocyclic Oxazines—Cromwell. 12. The Benzoxazines—Elderfield, Todd, and Gerber. 13. Thiazines And Benzothiazines-Elderfield and Harris. 14. Phenazines, Phenoxazines, And Phenothiazines—Pearson.

The Chemistry Of Organometallic Compounds, *by Eugene G. Rochow, Department of Chemistry, Harvard University, and Dallas T. Hurd, Lamp Div., General Electric Co., and Richard N. Lewis, Olin Mathieson Chemical Corp., John Wiley & Sons, Inc., New York, (1957), 344 pp., cloth,* **$8.50.**

The authors of this work present up-to-date information on all phases of organometallic compounds: structure and physical properties, preparation, chemical reactions, and applications. The subject matter is organized on the basis of the general properties of the carbon-metal bond; electronegativity and bond polarity are used freely as indicative of the type of organometallic compound to be expected in a given instance. Topics of special interest include: The sandwich compounds—The bridge compounds—Fluorinated organometallic compounds—Organometallic compleions—The new pentaalkyl compounds of the group 5 elements—Organometallic compounds in anionic polymerization (especially the "Ziegler process") for making polyethylene—The typical as well as "abnormal" reactions with organic compounds.

Ciba Foundation Symposium On The Nature of Viruses, *Editors for the Ciba Foundation, G. E. W. Wolstenholme, O. B. E., M. A., and Elaine C. P. Millar, A. H., W. C., 291 pp., Illus., Little, Brown and Co., Boston, cloth,* **$8.**

In his Foreword Sir Charles Harrington of the National Institute for Medical Research (London) states: "We seem to have reached a point at which biochemical and biopyhsical studies of viruses have really come into their own and offer the greatest prospects of advance. It was this thought that encouraged those who were responsible for arranging this symposium." Experts from both sides of the Atlantic participated in the symposium. From America cane A. H. Coons of the Harvard Medical School, R. Dulbecco of the California Institute of Technology, F. R. Bang of Johns Hopkins School of Hygiene, D. Caspar of Yale, G. K. Hirst of the Public Health Institute of the City of New York, J. D. Watson of Harvard, and R. C. Williams and C. A. Knight of the University of California. Among others on hand were Sir Macfarlane Burnet, G. L. Ada, F. C. Bawden, A. W. Downie, S. Gard, F. Kradolfer, A. Lwoff, W. S. Schafer, E. T. C. Spooner, and Wilson Smith.

The Chemistry of the Coordination Compounds, *Edited by John C. Bailar, Jr., University of Illinois, with Daryle H. Busch as Editorial Assistant, American Chemical Society Monograph Series No. 131, 834 pp., Reinhold Publishing Corp., New York, (1956), cloth,* **$18.50.**

Twenty-four expert chemists have contributed discussions of such topics as typical coordination compounds—how formed, coordinating groups, and properties; the development of coordination theory: isomerization of coordination compounds, including the stereochemistry of coordination numbers 4 and 6; special features such as acid-base and oxidation-reduction properties; interesting complex compounds; physical-chemical techniques used to study coordination compounds; and applications of coordination theory and compounds to such fields as analytical chemistry, dyes and pigments, biological systems, electroplating of metals, and water treatments. All salient features of the chemistry of coordination compounds are discussed with special attention given to recent advances.

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Proprietary Association Meeting

(*Continued from page 754*)

the increasing demand from customers for more extensive and expensive services. We may, in fact, be over-servicing our customers. The idea that the customer is king has been a most costly notion of businessmen."

Regarding automation in distribution, Mr. Nolen said, "We have done a fair job in certain of the physical phases of distribution, such as transportation, storage, and record-keeping, but in many respects we are still in the handicraft stage."

Looking at the proprietary drug industry, Mr. Nolen said:

"It is evident that vast changes are taking place and our success as producers and distributors of proprietaries will largely be contingent on our ability to recognize these patterns, and alter or create new distribution plans adjusted to the effects of these changes. Among the many developments in the proprietary field I have decided to single out twelve which I believe are highly significant from a distribution point of view:

1. Greater consumption of drug products as a result of mounting consumer incomes, broader consumer education and more extensive use of health and welfare protection plans.

2. Growing importance of pre-selling and advertising in sale of proprietary products.

3. Increasing significance of packaging and display in the distribution of drug products.

4. Emergence of "brand ratios" as a vital marketing factor.

5. Declining emphasis on private brands in proprietary field.

6. Growing importance of open display, self-selection and self-service in sale of proprietary products.

7. Declining importance of clerks in sale of proprietary products.

8. Increase in number of outlets handling proprietary products.

9. Wider employment of specialists in marketing of proprietary items.

10. Growing importance of unit sale and line extension to distributors.

11. Greater effort to adjust relatively inflexible proprietary price structure to the demands of an inflationary economy.

12. Growing size of drug stores with no important increases in store number.

Dr. Howard A. Prentice, executive vice-president of the association, had the following to say regarding the restrictive sales conrtoversy:

"Restrictive sales of proprietary medicines in a few States have unfortunately developed as a legislative battle between manufacturer and drug retailer. In reality, however, this conflict has basically resulted from today's tremendous change in consumer buying habits, due primarily to better roads, the increased use of the automobile and one-stop shopping by consumers. Basically, the competitive retail groups in these States should resolve the issue, as long as the basis for it is competition. There can be no compromise with the public health to reach this objective. As evidence of the latter, the courts and State legislatures are increasingly finding that the public health is not jeopardized by the sale of recognized proprietaries through non-drug outlets.

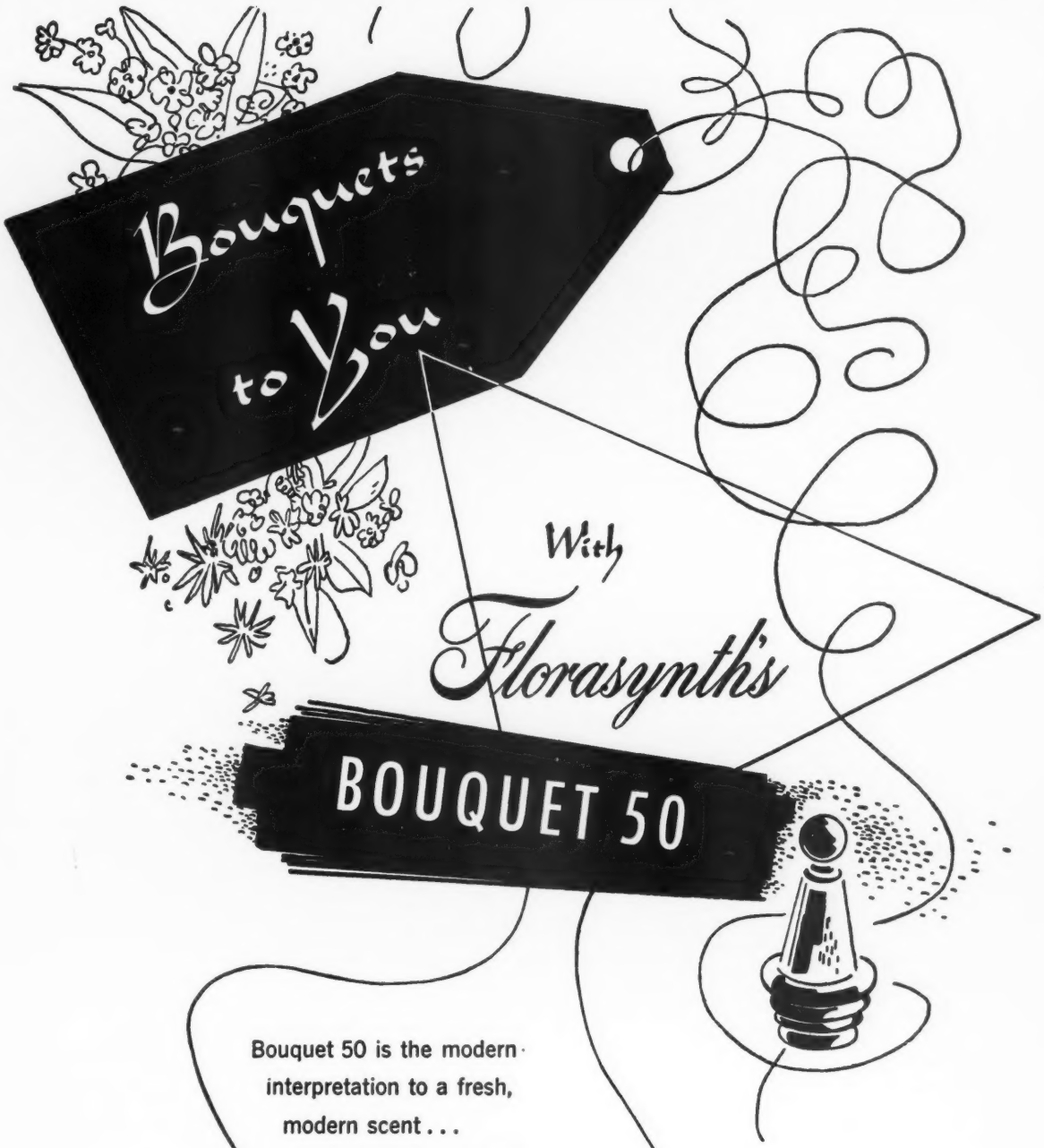
"As far as proprietary manufacturers are concerned, this association will continue to support pharmacy. Through organized activity, members of this profession in the last century have achieved much, and the Proprietary Association recognizes these accomplishments. In our planning for the months ahead, we should assist, wherever we can, the druggists and pharmacists to be increasingly more efficient, to become better merchandisers, and give better public service. But I am firm in my belief that:

"Proprietary medicines should not be restricted to drugstore sale because of alleged health hazards which court decisions and legislative actions are demonstrating to be unsound. As one example of these alleged health hazards, it has been charged that aspirin should be held to drugstore sale because the purchaser is warned—or can be warned—of hazards in its use.

"In August of 1956, the Washington office began to keep a file on accidental poisonings, including aspirin, based on clippings from a national press service. This file is still in progress and is supplying us with a wealth of information on cases which appear for the most part in the home. This survey has strengthened our conviction that there should be a national clearing house through which an accurate reporting of all statistics of this type, nation-wide, can be made. Such a clearing house is now being established by the Surgeon General of the United States Public Health Service of the Department of Health, Education and Welfare.

"In connection with the survey, an intensive six months' investigation of reported accidental aspirin ingestion cases was initiated in August, 1956. Intensive investigation was undertaken, since aspirin is more frequently cited in the press than any other proprietary medicine, with a consequent wide public interest in its accidental overuse, especially by children. During this period, 69 cases were reported through our clipping service. These were followed up by experienced investigators to determine, among other items, the point of sale. Here are the findings:

"Forty-five Aspirin purchases were made in drugstores; 19 were purchased in outlets other than drugstores. In 5 cases, the point of sale could not be determined by the investigator."



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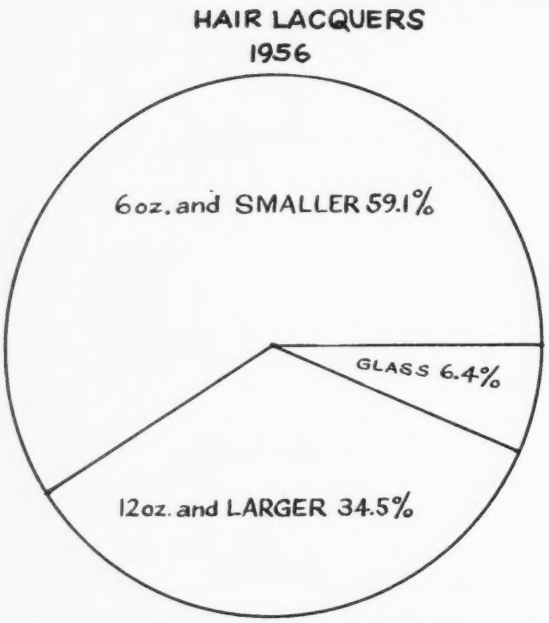
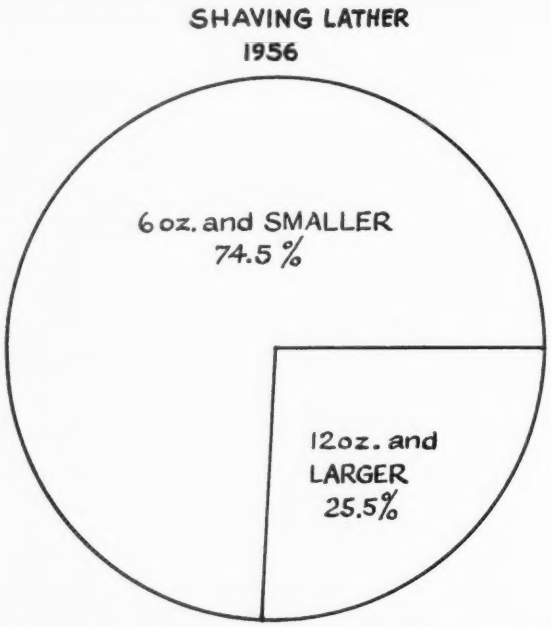
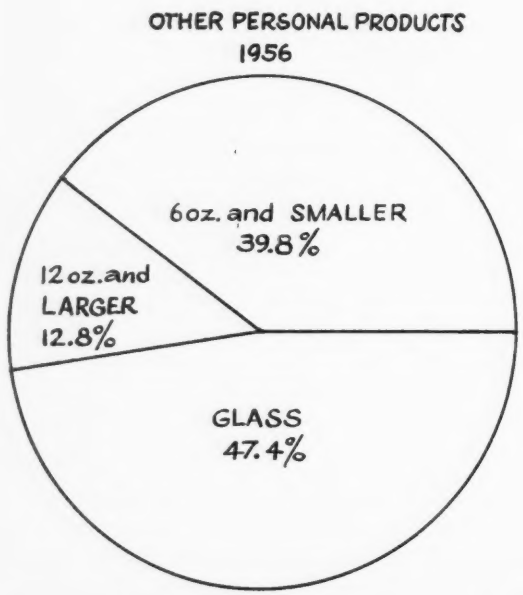


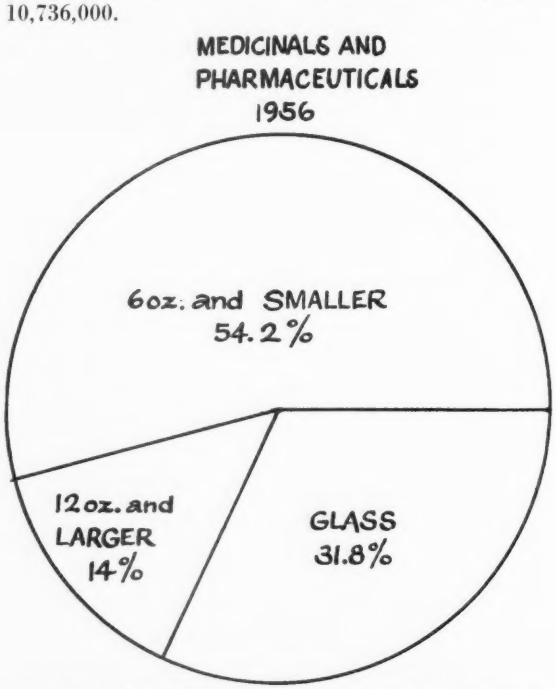
The proportion of 6 ounce packages of aerosol hair lacquers remained substantially constant at 59.1 per cent in 1956 and 59.8 per cent in 1955. Large sizes declined proportionately from 39.8 per cent in 1955 to 34.5 per cent in 1956 while glass packages rose to 6.4 per cent of the total from 0.4 per cent in 1955.



There may be some indication of a trend toward larger sizes among Shaving Lather aerosols. Although the number of six ounce units declined and the proportion of the total dropped to 74.5 per cent as compared with 79.9 per cent in 1955, the proportion of larger size increased from 20.1 to 25.5 per cent along with an increase in total units from 9,098,000 to 10,736,000.



Because this is a catch-all category, changes in size distribution may represent the growth of a new item rather than any merchandising change. Glass packages accounted for 47.4 per cent in 1956, 62.3 per cent in 1955; 12 ounce packages were 12.8 per cent in 1956 and 10.1 per cent in 1955; 6 ounce packages increased from 27.6 per cent of the total to 39.8 per cent.



Medicinals and Pharmaceutical aerosols were packaged to the extent of 31.8 per cent in glass in 1956 and 24.5 per cent in 1955; larger packages accounted for 14.0 per cent of the total in 1956 and 17.7 per cent in 1955; the proportion of small packages declined from 57.8 per cent in 1955 to 54.2 per cent in 1956.

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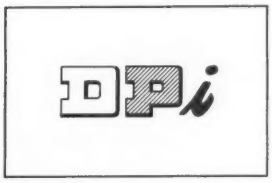

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(Continued from page 753)

in practically all commercial products advertising silicones on their labels.

The infrared spectra of typical fluids from each of these two families of polymers are shown in Figure 1. Several molecular structure correlations are tabulated to show the nature of the absorption bands which are observed. All dimethyl silicone polymers will have infrared spectra very nearly identical to that shown in Figure 1A; the spectra of all methylphenyl silicone polymers will be quite similar to that shown in Figure 1B. However, in this latter case the relative intensities of certain bands will vary depending on the relative concentrations of $[(CH_3)_2SiO]$ and $[(CH_3)\Phi SiO)]$ units. For example, the relative intensities of the Si-Φ bands at approximately 7 microns and the $Si\text{-}CH_3$ band at approximately 7.92 microns can be used to monitor the constant composition of methylphenyl fluids which are intended to have a fixed SiΦ content.

These spectra illustrate why we favor infrared absorption spectroscopy so heavily over chemical methods. When we see something we see it in full context through its detailed and characteristic spectrum; by chemical anaylsis one sees only a degradation product after the silicone polymer in some way has been destroyed, and one may still be faced with the task of putting the pieces back together again to give the chemical structure of the starting material.

In Figure 2 the ultraviolet absorption spectra of these same two polymers have been reproduced. Note the transparency of the dimethyl fluid as compared to the methylphenyl fluid. This illustrates the fact that the dimethyl fluid does not possess sun-screening properties. The ultraviolet spectrum of phenyl containing silicones contains relatively little information compared to the infrared spectrum, but it can be a very useful analytical tool when properly applied and interpreted. In certain after-shave lotions the methylphenyl silicone is the only ultraviolet absorbing component present, and consequently direct ultraviolet analysis can be used to determine the concentration of the silicone.

II. Quantitative Infrared Analyses

We have seen what the infrared spectra would look like for the two types of silicones now most used in cosmetic and toilet goods products. Let us now see how one might use these spectra for quantitative analyses. At this point we will make the simplifying assumption that the silicone has been isolated from a formulation in a reasonable state of purity. In most cases the solution to the whole analytical problem hinges on one's ability to isolate the silicone from the other components, and this point will be discussed in more detail later in this paper.

The $Si\text{-}CH_3$ band at approximately 7.92 microns obeys Beers Law, i.e., the absorbance of this band is a

(Continued on page 832)

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FLORENCE NIGHTINGALE (1820–1910), noted English society woman, reformed hospital practice and founded England's nursing system. Illustration shows her supervising a hospital during the Crimean War where she cut hospital deaths from 42% to 2% in six months time.

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Readers' Questions . . .

Brilliantine: *Can you give us a formula for a low priced brilliantine with alcohol that will separate into two layers. We now use white oil with 3 per cent of alcohol, but we do not get two layers.* AMSTERDAM.

If you will dilute your alcohol with sufficient water, it will no longer be miscible with the mineral oil and you will get the desired two layers. The proportions of oil and diluted alcohol should be adjusted according to the respective proportions of each layer that you want.

Cologne Stick: *What is a typical formula for solid perfume or cologne stick? I wish to use a preparation of this type as a carrier for a pharmaceutical to be applied to the skin.* CHICAGO.

Stick preparations of this type consist usually of from 6 to 8 per cent of sodium stearate dissolved by heating in alcohol. The preparation is poured into molds and solidifies on cooling. The presence of too much water is deleterious. Evaporation may be somewhat retarded by the inclusion of propylene glycol, sorbitol or glycerin and the addition of other ingredients may be made only with due regard for their compatibility with the soap.

Tooth Paste: *I would like your assistance in the reformulation of our coconut soap-precipitated chalk tooth paste which tends to dry out on standing.* BERLIN.

Your formula, containing very little water, is probably not drying out, since evaporation of the glycerin would be slight. What may be taking place would be more likely to be setting, possibly due to slow solution of the soap in the glycerin followed by gelling. Your proportion of precipitated chalk in the formula is much too low, the soap too high and complete reformulation is advisable. Incidentally, the high proportion of coconut soap may give rise to excessive alkalinity and irritation.

Hair Pomade: *I now make a hair pomade which consists mainly of petrolatum and I would like to change it to one based on lanolin. Can you give me some advice in this matter?* TRENTON.

Most hair pomades seem so be based upon petrolatum because of the fine lustre it imparts to the hair; a preparation that consisted mainly of lanolin might be somewhat sticky. Your preparation can probably be greatly improved by the addition of from 10 to 20 per cent of hydrous lanolin carefully melted and mixed with your current ingredients.

Scalp Treatment: *Can you recommend a stimulant that will activate scalp without irritating the skin? I have been using alcohol for this purpose, but find that it has too great a drying effect. Furthermore, we wish to use a combination of salicylic and benzoic acids in an aqueous solution as a hair and scalp lotion; can you advise us as to the percentages of these two compounds to be used in 100 ounces of the preparation?* PHILADELPHIA.

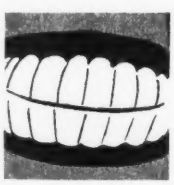
Stimulants used in scalp lotions include pilocarpine hydrobromide, tincture of jaborandi or tincture of capsicum to the extent of one-tenth per cent (one-tenth of an ounce to 100 ounces) or less. The capsicum tincture is irritating and the others should be carefully tested before use. For 100 ounces of scalp lotion, proportions of benzoic acid should not exceed one ounce, of salicylic acid one-half ounce, and should be somewhat less.

Antioxidants: *Please advise us as to the best antioxidant to use with an animal fat such as mutton tallow.* MIAMI.

Effective antioxidants for fats in the anhydrous state include propyl gallate, with and without added citric acid, and butylated hydroxyanisole. The problem is different and quite a bit more difficult in stabilizing fats that have been emulsified because of the increase in exposed surface of the fat and the possibility that a water-soluble antioxidant will move into the aqueous phase and become unavailable.

Eye Wash: *Have you any suggestions for formulating a wash solution for tired eyes?* NEW YORK.

Formulas for products of this type are available in a number of standard pharmaceutical formularies; about as good a product as any would consist of 2 parts of zinc sulfate and 20 parts of boric acid in 1000 parts of distilled water. Most important, the eye wash should be sterile and remain so under conditions of use and be free of all suspended matter. The solution given is self-sterilizing, but it should be filtered with great care and the bottles should be very carefully washed, finally with distilled water.



Denture Cleaner: *Can you assist me with suggestions for formulating a powder denture cleaner that is dissolved in water before use?* CHICAGO.

There need be little difference between a product of this type and current household cleansers, with the exception of a little flavoring. A mixture consisting of about 40 per cent of soda ash, 40 per cent of trisodium phosphate and 20 per cent of an aralkyl sulfonate, with suitable flavoring, should be suitable and effective.

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Trade Literature

Emersol Stearic Acids

Emery Industries, Inc., Fatty Acid Sales Dept., Carew Tower, Cincinnati 2, Ohio, has issued a profusely illustrated, three-color, 24-page booklet on Emersol Stearic Acids. Complete information on the properties and other valuable information on these products is given. Many charts, photographs, drawings, and tables make the book easily readable, and make for easy absorption of the information contained therein.

Glass and Plastic Containers

W. Braun Co., 3600 North Canal Street, Chicago 6, has issued a 106-page catalog of glass and plastic containers, and caps and applicators of a wide variety. Having no formal index, the catalog lists glass and plastic containers according to size with a drawing of the bottle and specifications. Then there is a cross reference indicating other sizes. Each bottle is listed in all sizes made. There are photographs of many glass and plastic containers and closures, an explanation of fine ceramic decorating, and a glossary of trade terms and simple conversion factors.

Pressure Packaging Catalog

The Can Division of Crown Cork & Seal Company, 9300 Ashton Road, Philadelphia 36, has issued the third edition of its Pressure Packaging Catalog which gives complete information about the one-use pressurized can, including the types of products which may be so packaged, the names of valve suppliers, loading equipment, and independent loading contractors.

Coding and Imprinting

A new 4-page bulletin describing the Rolaprinter coding and imprinting attachment for wrapping and bundling machines has been issued by Adolph Gottscho, Inc., Hillside 5, N. J. Illustrated with photographs and schematic drawings, the bulletin shows many applications, ranging from placement of a small code-date on a preprinted wrapper to printing descriptive copy on five sides of a bundle overwrap.

Neomycin

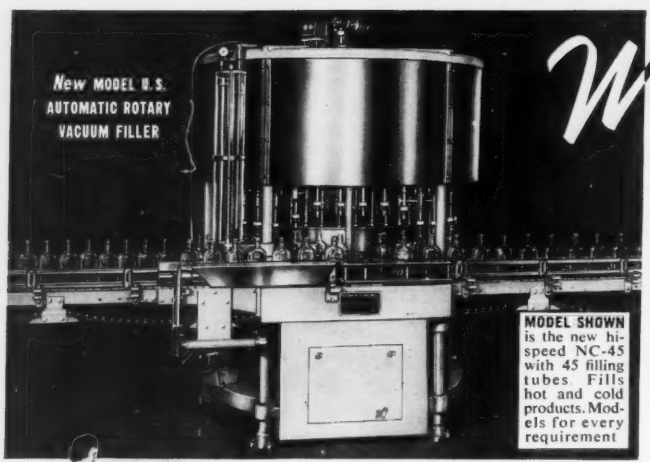
S. B. Penick & Company, 50 Church Street, New York 8, has available an 82-page booklet on Neomycin—A Review and Digest of the Recent Clinical Literature. Penick issued its original brochure on neomycin just two years ago. This new edition brings the subject up to date, and according to Penick, "It will be evident to the reader why neomycin has established itself so firmly in the armamentarium of the physician and veterinarian."

Products Derived from Coal

Barrett Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, has issued a new edition of its famed chart Products Derived from Coal. This latest edition is more complete than ever before and contains a large number of derivatives not mentioned in previous issues.

Acrolein Dimer

Union Carbide Chemicals Company, 30 East 42 Street, New York 17, has issued an 8-page technical bulletin on Acrolein Dimer, giving physical properties, shipping data, chemical properties, reactions, and physiological properties.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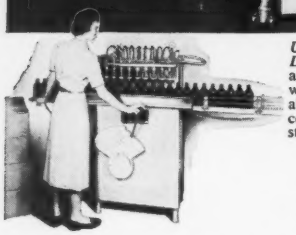

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(*Continued from page 828*)

linear function of concentration. A series of solutions containing known concentrations of either the dimethyl or the methylphenyl fluids were prepared and their absorbances obtained. The procedure used to determine the absorbances is illustrated in Figure 3. A plot of absorbance vs. concentration is shown in Figure 4 for both the dimethyl and the methylphenyl fluids whose spectra appear in Figure 1. The fact that the slope of the calibration curve of the dimethyl fluid is greater than that of the methylphenyl fluid is as expected since it contains a larger fraction of $Si\text{-}CH_3$ groups per gram of polymer. These two calibration curves at approximately 7.9 microns represent the types we most frequently use in the quantitative analyses of products containing silicones.

Silicone fluids come in a wide range of viscosities (i.e., from a few centistokes up to a jelly-like consistency of several million centistokes), and one might wonder about choosing the proper fluid for general calibration purposes. For dimethyl fluids this is not a problem as the slope of the dimethyl fluid curve shown in Figure 4 is almost identical to that of other dimethyl fluids; this has been checked for a series of fluids varying in viscosity from 60 centistokes up to 10,000. This means that almost any dimethyl fluid can be used for calibration purposes for the general analysis of dimethyl silicones only. However, for methylphenyl fluids the slope of the calibration curve for the $Si\text{-}CH_3$ band at 7.92 microns will vary if the ratio of dimethyl groups, $[(CH_3)_2SiO]$, to methylphenyl units $[(CH_3)_2 \Phi SiO]$ varies. Thus, in calibrating to analyze for methylphenyl silicones, one must use the identical fluid (or very nearly so) as present in the sample to be analyzed. For the analysis of unknowns one can usually identify the proper methylphenyl fluid to use for calibration from a qualitative infrared scan of the methylphenyl silicone isolated from the unknown. There are only a limited number of methylphenyl fluids available commerically and so the identification as to type should not be too difficult.

An alternative analytical procedure that at times can be used for methylphenyls would be to calibrate and analyze in the ultraviolet region, and this has been done for some of the methylphenyl analyses of commercial products that are illustrated later. However, a word of caution is necessary as other ultraviolet absorbing components may be present and seriously affect the accuracy of the analysis if not separated form the silicone.

It is possible to use other infrared absorption bands for the analysis of Silicone polymers. This may be necessary if one finds that certain ester components are extracted with the silicones and absorb strongly in the 8 micron region.

We are now ready to see how one can apply what has been discussed to actual problems.

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III. Applications

A. Determination of Silicone Purity

Let us first take the case where one is purchasing silicones and would like to monitor the purity of all shipments. Of course, it is understood that a qualitative infrared scan through the 2-15 micron region establishes that the appropriate silicone has been received. For the quantitative work a calibration curve run with a known pure sample is all that is needed. One can use either the infrared or ultraviolet regions for methylphenyl fluids, and the infrared only for the dimethyl fluids. Then an analysis is made on a sample of the shipment in question. This is done by weighing out a known amount of sample and dissolving it in the proper solvent (i.e., CS_2 or CCl_4 for infrared work). The absorbance of this solution is obtained, and using the appropriate calibration curve or an equivalent algebraic equation the observed grams of silicone/ml. of solvent is determined. The purity is calculated by the following:

$$\% \text{ Silicone} = \frac{\text{gms. silicone detn/ml. solvent}}{\text{gms. sample/ml. solvent}} \times 100$$

The infrared procedure that we use to determine absorbances is accurate to roughly ±1 per cent at approximately the 0.45—0.55 absorbanc elevel. Thus, for a single analysis one would expect the error to be approximately ±1 per cent. A series of analyses were made on some typical standard production dimethyl fluids using the $Si\text{-}CH_3$ band at about 7.9 microns and the infrared procedure outlined above. The results showed an average deviation of approximately ±1 per cent absolute from the 100 per cent purity value. We feel that it is reasonable to expect that purity checks, using the standard infrared procedure with solvent compensation as outlined above, should give results in the 100 per cent range with an error less than approximately ±1.5 per cent of the value reported by a single determination. This error results essentially from the experimental error in measuring absorbances, and not from non-silicone impurities. It can be reduced somewhat by averaging replicate determinations. Greater accuracy has been obtained by a somewhat more complicated differential infrared procedure which will not be described here.

In passing we might remark that we also have used relatively simple infrared procedures to determine if such things as hydrocarbons, mineral oil or esters are present in silicones as diluents. One can detect the presence of less than 1 per cent of these types of non-silicones.

B. Separation of Silicones in Commercial Products

Up to this point we have illustrated how one might qualitatively recognize the presence of a silicone by its infrared spectrum, and to spectrally analyze quantitatively for purity. However, silicones are usually present in commercial products in relatively low concentrations, and so if one is to apply what has been said before it is usually necessary to first con-

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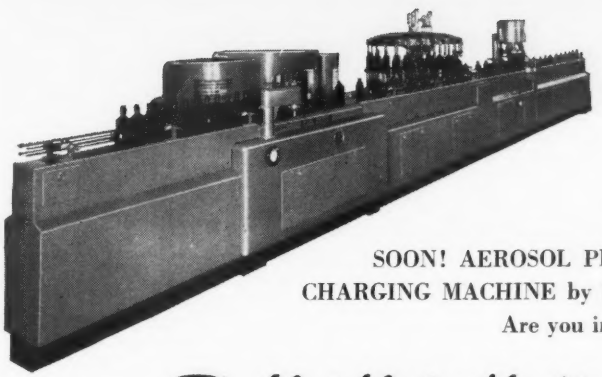

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centrate or isolate the silicone so that it can be studied spectrally. The problem is that although the infrared spectra of silicones are very intense and unique, the other components will have infrared absorption bands of their own and may be present in such relatively large concentrations so as to mask the silicone spectrum.

To illustrate this and other points, we bought a number of different well-knwon products at a local drug store and used these in our work. (Our analyses of these will be discussed later.) In Figure 5a we have reproduced the infrared spectrum of a typical shave lotion taken directly from the bottle with no further attempt to concentrate the silicone. One is hard pressed to qualitatively identify the presence of a silicone. We then allowed the solvent to evaporate, and obtained the spectrum of the residue which appears in Figure 5b. There is certainly no doubt that a methylphenyl silicone has been incorporated in this product.

Present commercial silicone-containing cosmetic and toilet goods products fall into two categories: a) homogeneous solutions, and b) emulsions and pastes. Typical examples of the solution type are shave lotions, and most hand lotions typify the emulsion type. In the analysis of both types one can use evaporation procedures to take advantage of the fact that the silicone polymers which are used contain only those polymers which boil in the range of 300 °C and higher.

Solution Type Products

The alcohol solvents used in the solution type products can be evaporated off at relatively low temperatures with essentially no detectable loss of silicone. Thus, our procedure is first to isolate the silicone in a reasonable state of purity by evaporating the solvent using temperatures in the 50-100 °C range. The residue from this evaporation is then scanned through the infrared region and the type of silicone established; this identification also allows one to choose the calibration curve or equation appropriate for the quantitative work. If the product is an alcohol solution, one would expect to see a methylphenyl silicone. In case that there are high boiling non-silicones present in the formulation, these components can usually be recognized in the qualitative spectra and the analytical procedure modified appropriately if necessary. For the quantitative aspect the total residue left from the evaporation of a weighed sample of the unknown is dissolved in a known volume of CS_2 and the absorbance of the $Si-CH_3$ band at about 7.9 microns is obtained. With the appropriate calibration curve the gms. of silicone /ml. of CS_2 are determined. Multiplying this number by the volume of CS_2 used gives the total silicone found in the weight of sample taken for analysis, and this is readily converted to per cent silicone.

For the analysis of alcohol solutions where it is known that no non-silicone ultraviolet absorbing

components are present, one can dissolve a known weight or volume of sample directly in ethanol or propanol and quantitatively analyze for the phenyl content which then must originate from the methylphenyl silicone. An ultraviolet spectrophotometer is used and the analysis made at approximately 264 millimicrons. In some cases non-volatile esters are also present and thus are not separated by the evaporation procedure. In these cases we at times find it most convenient to Parr Bomb the residue and to analyze the resultant silica colorimetrically.

Emulsion Type Products

For these products it is necessary to break the emulsion and to separate the silicone. Emulsions vary in the case with which they can be broken, and so in this case it may be necessary to try several different techniques in order to find the one that will work.

For qualitative indentification, the following procedures for separating the silicones have been found very useful:

(a) The emulsion is shaken with about twice its volume of a 1:1 dioxane-toluene mixture, centrifuged and the top layer taken off. This top layer is mostly toluene and contains the silicone plus a small amount of organic material. After evaporating off the toluene an infrared spectrum of the residue will show silicone if it were present in the original emulsion. This technique was found to be successful on roughly 9 out of 10 emulsions.

Our experience has been that the silicone usually will not be extracted if the emulsion is not broken. One can try the following if the dioxane-toluene mixture is unsuccessful:

(b) Evaporate the emulsion to dryness and heat the residue hot enough to melt it, and cool slowly. If the silicone is a dimethyl fluid it will be insoluble in the residue and will float on the surface of the melt. After cooling, a portion of the silicone can be mechanically separated and its infrared spectrum run as a film between two salt plates.

If the silicone is a methylphenyl fluid, it will be soluble in the emulsion residue and generally can not be mechanically separated. An infrared spectrum of this total residue may indicate the presence of a silicone; detectability depends on the relative amount and type of silicone used. If infrared is doubtful, ultraviolet may be useful, but only for the methylphenyls.

(c) Heating or freezing will usually break an emulsion, and the silicone concentrate can then be extracted with a solvent such as CCl_4 or petroleum ether.

(d) The use of inorganic salts also may break the emulsion, although we have had very few

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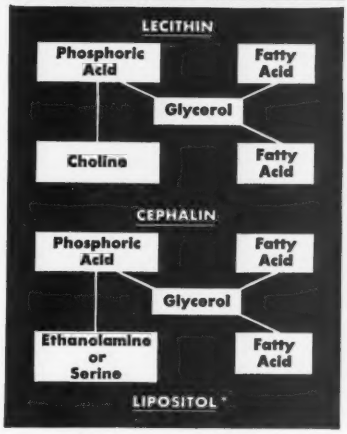

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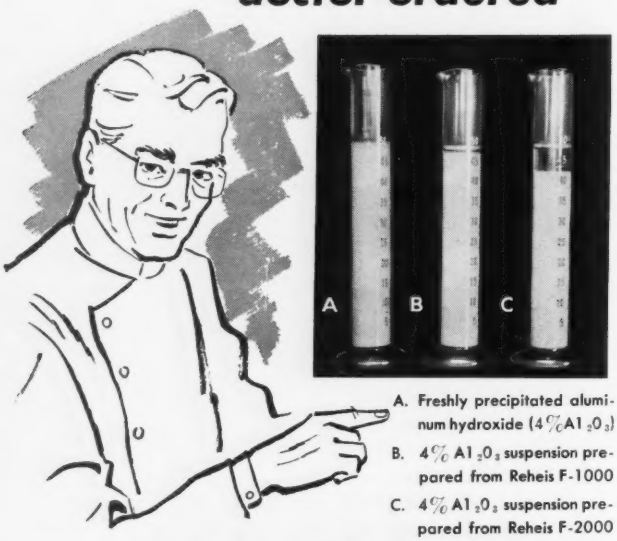

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instances where we had to resort to this. The infrared spectrum of a typical hand lotion as taken from the bottle is shown in Figure 6 along with the spectrum of the silicone extracted from it by one of the above procedures; the spectrum of a dimethyl silicone fluid is also reproduced for ease of comparison.

For the quantitative analysis of emulsions for silicones, the following procedures have been most useful:

(a) As in the qualitative section above, the easiest and fastest procedure is to use a 1:1 dioxane-toluene mixture to break the emulsion and extract the silicone. About 3-5 grams of emulsion are weighed into an 8 dram vial, a volume of the dioxane-toluene mixture which is at least twice that of the emulsion is added, and the contents shaken for at least several minutes. The vial is then centrifuged and the top layer removed and saved. A second extraction is carried out on the remaining bottom layer using an equal volume of dioxane-toluene. The top layers are combined, the solvents evaporated off, the residue dissovled in CS_2 or CCl_4 (10-25 ml.), and analyzed quantitatively at the $Si-CH_3$ band at about 7.9 microns. If the silicone content is greater than 5 per cent, more than two extractions may be necessary.

(b) An alternate quantitative technique that is sometimes useful is to freeze the emulsion at dry temperatures. After the broken emulsion has warmed to room temperature, successive CCl_4 (or hydrocarbon solvent such as pertoleum ether) extracts are made and combined. The extracting solvent is evaporated off and the silicone residue or concentrate analyzed.

(c) A measured amount of the emulsion is placed in a calibrated tube and either frozen or heated until broken. The silicone can then be separated on a centrifuge. If a dimethyl silicone fluid has been used, it will be found as the top layer; a methylphenyl fluid will settle out as a distinct phase at the bottom of the tube. The volume of silicone is then recorded although it might be quite small if the silicone content is aroung 1 per cent. It is advisable to run a spectrum on the silicone layer to ascertain its identity and to estimate its purity. Applying an average density value of 0.96 for dimethyl fluids and 1.07 for methylphenyl fluids, one can calculate a reasonable value for the per cent silicone.

(d) In cases where the separation of the silicone from the emulsifiers and the other non-aqueous components can not be made, a chemical method is very useful. The water and other volatile components are evaporated off from a

weighed sample of the emulsion. The total residue is weighed and then a portion of this is oxidized by Parr Bomb combustion and the resultant silica analyzed colorimetrically. Methods for doing this are in the literature and will not be discussed here. This procedure gives total Si and it is necessary to know the gravimetric conversion factor to convert this to silicone. However, where one is doing application or product development, this factor is known from the type of silicone being tested. It is to be remembered that chemical oxidation methods do not differentiate the Si that comes from the silicone and that which may come from colloidal silica or glass chips.

C. Anaylsis of Commercial Producls

One or more of the methods described above were applied to the commerical products which were purchased over-the-counter. We did not attempt to get all the silicone-containing products that are sold, but rather to get a representative number of different types. The products listed by number only in Table I represent well-known name brands. In some cases both qualitative and quantitative analyses were made, and in others no attempt was made to go beyond a qualitative identification. The results of our analyses are shown in Table I where the products are listed by types. The identification is given as dimethyl plus salicylate for the sun tan lotions. In one case the salicylate is part of the silicone polymer, and in the other it is present as a non-silicone component.

TABLE I

Analysis of Well-known Commerical Products

	Product No.	Type of Silicone	Wt.% Silicone
A. Hand Lotions	1	Dimethyl	1.5
	2	Dimethyl	1.0
	3	Dimethyl	1.3
	4	Dimethyl	2.4
	5	Dimethyl	5.0
B. Shave Lotions	1	Methylphenyl	1.1
	2	Methylphenyl	1.6
	3	Methylphenyl	Not determined
C. Sun Tan Lotions	1	Dimethyl plus salicylate	Not determined
	2	Dimethyl plus salicylate	Not determine
D. Hair Treatments	1	Dimethyl	0.8
	2	Dimethyl	Not determined
E. Others	Deodorant	Dimethyl	1.4
	Protective cream	Dimethyl	8.7
	Lip Pomade	Dimethyl	0.5
	Hand cream	Dimethyl	5.1

IV. Concluding Comments

Some useful methods which General Electric has adapted and applied have been outlined for both qualitatively and quantitatively analyzing commercial cosmetic and toilet goods products for silicones. These methods are applicable to quality control, and in some cases can be further modified for

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With ingenuity, the procedures outlined in this paper can be modified and adapted to give the necessary analytical support to development work aimed at showing special properties or performance resulting from the use of silicones.

THE ANTIBACTERIAL ACTIVITY OF ALUMINUM SALTS

(*Continued from page 749*)

have, therefore, studied the antibacterial effectiveness of aluminum chlorhydroxide, aluminum chloride, and aluminum sulfate. Four types of tests have been performed: (1) *in vitro* killing of organisms by aqeous solutions; (2) killing of organisms on the cutaneous surface; (3) prevention of growth of organisms on hydrated cornified epithelium (sheets of callus); (4) control of bacterial populations in the axilla.

1. Bactericidal Action in Vitro

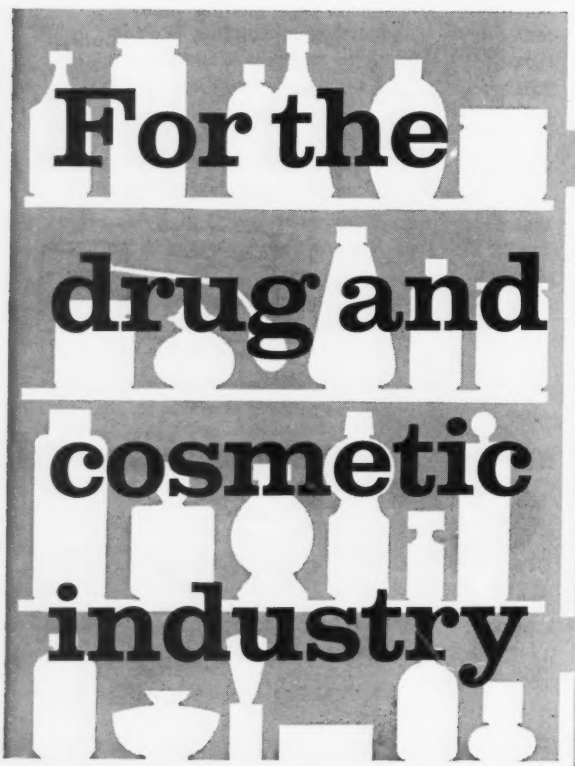
Various dilutions of the aluminum salts were prepared as follows:

Solution A: 5 ml. of 20 per cent stock aluminum solutions plus 85 ml. of sterile distilled water
Solution B: 9 ml. of solution A plus 81 ml. of water
Solution C: 9 ml. of solution B plus 81 ml. of water
Solution D :9 ml. of solution C plus 81 ml. of water
Solution E: 9 ml. of solution D plus 81 ml. of water

To 9 ml. of each of these solutions is added 1 ml. of a 1:100 dilution of a 24 hour culture of the test organism. Thus, the organism is subjected to various concentrations of the aluminum salts* ranging from 1:100 (solution A) to 1:1,000,000 (solution E). The actual number of viable organisms added to the tubes is determined by plating a 1:1,000,000 dilution of the bacterial suspension. At periods of 3, 9, and 14 minutes following addition of the organisms to the solutions of aluminum salts, 1ml. samples are plated out with Bacto-tryptose agar and the plates counted after incubation at 57° C. for 48 hours.

Three aqueous solutions of aluminum salts were studied: (1) 20 per cent w/w aluminum chlorhydroxide; (2) 20 per cent w/w aluminum chloride ($AlCl_3 \cdot 6\ H_2O$) buffered with 5 per cent w/w urea; and (3)

*Since all stock solutions as obtained were prepared on a weight to weight basis, there is a slight error in the concentrations of the final solutions.



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20 per cent w/w aluminum sulfate ($Al_2(SO_4)_3 \cdot 18 H_2O$) buffered with 5 per cent w/w urea. Water was chosen as the vehicle in order to avoid the unknown factors of a more complex vehicle. Urea has been used as a buffer in antiperspirants containing aluminum salts and a 20 per cent w/w concentration is common in antiperspirants. The organisms studied were a gram-positive micrococcus isolated from the normal cutaneous surface, a diphtheroid, and a coliform bacillus.

The results of these studies are summarized in Table I. They indicate that the gram-positive organisms are more sensitive to each of the aluminum salts than the gram-negative organism. The aluminum chlorhydroxide solution is more effective than aluminum chloride or sulfate against the gram-positive organisms. Even a 1:1,000,000 dilution of chlorhydroxide appears to be quite effective against gram-positive organisms.

TABLE I

in vitro activity of aqueous solutions of three aluminum salts on three types of organisms which inhabit the normal cutaneous surface.

	Micrococci	Diphtheroid	Coliform bacillus
Chlorhydroxide	No growth from 1:100,000* dilution after 3 minutes	No growth from 1:100,000 dilution after 3 minutes	Growth from 1:100 dilution after 14 minutes
Chloride	Growth from 1:100 dilution after 14 minutes	No growth from 1:100 dilution after 9 minutes Growth from 1:1000 dilution after 14 minutes	Growth from 1:100 dilution after 14 minutes
Sulfate	No growth from 1:1000 dilution after 3 minutes	No growth from 1:100 dilution after 9 minutes	Growth from 1:100 dilution after 14 minutes
	Growth from 1:10,000 dilution after 14 minutes	Growth from 1:1000 dilution after 14 minutes	

*A certain degree of irregularity wasobserved in theactivity of some more concentrated solutions of aluminum chlorhydroxide. This observation is being further investigated.

It is known that some solutions which contain metal ions appear to kill microorganisms and that the organisms apparently killed by them can be shown to be viable if suitable "neutralizing" agents are added to the culture medium. A well-known example of this is the action of thioglycolate in "neutralizing" the mercurial antiseptics[7]. We have not been able to show that the use of sodium thioglycolate in tryptose agar increases the number of viable organisms after they have been in contact with a 1:100,000 dilution of aluminum chlorhydroxide.

The ability of alkali to neutralize the bactericidal effect of the aluminum chlorhydroxide has been studied. Micrococci were added to 1:100,000 aluminum chlorhydroxide solution and after 3, 9, and 14 minutes sufficient N/100NaOH was added to raise the pH of the solution to about 7.5. A sub-culture was then made in regular Bacto-tryptose agar. The pH of the chlorhydroxide solution was further raised to about 9.0 with additional alkali, and a second subculture made. Occasionally there develop in plates so prepared a few colonies which are not seen in

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control plates made from solutions to which no alkali had been added. Therefore, some few organisms, which appear to have been killed, have been "revitalized" by the alkali. This number never has exceeded 0.1 per cent of the inoculum. Combining alkali and thioglycolate as neutralizers does not increase the number of viable organisms.

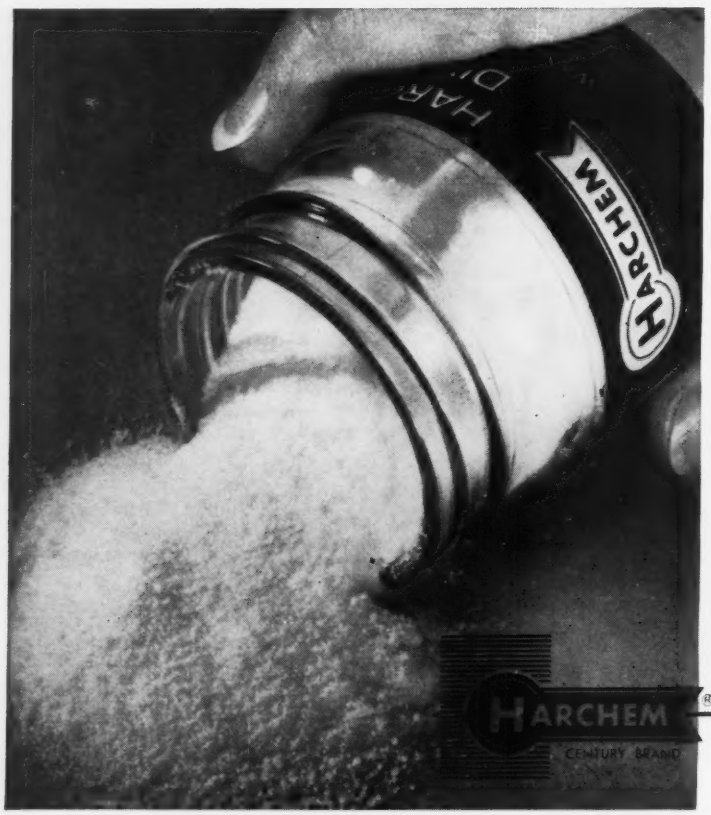
If one is interested solely in the deodorant properties of the aluminum salts, it may not be necessary to know whether an aluminum salts is bacteriostatic or bactericidal. Organisms which are unable to grow and multiply are not capable of decomposing sweat to form odorous compounds. Therefore, a good bacteriostatic agent will be as effective in preventing development of odor as will a bactericidal agent.

2. Bactericidal Action in Vivo

It is difficult to measure the bactericidal action of any compound applied directly to the cutaneous surface. How can one determine the number of viable organisms which remains on the skin surface after application of a germicide? Are viable organisms present on the surface which cannot easily be removed and grown in culture? Surely, simple swabbing techniques do not reveal definite information about the presence or absence of viable organisms. Meyer and Vichers[8] say that alum "hardens" the cutaneous surface and traps viable organisms on the skin, but that subsequent hydration of the *stratum corneum* tends to free the trapped organisms. Blank and Coolidge[9] found that the quaternary ammonium compounds alter the electric charge on the cutaneous surface and that this tends to attract and hold viable organisms on the surface; perhaps the aluminum salts could do the same. They further observed that this charge could be altered by alkalinizing the skin; washing with an alkaline solution or soap tends to free the electrostatically held organisms.

Price[10] developed a technique which consists of washing the skin in successive basins with soap and water, and culturing the wash waters. From the count or organisms removed from the surface, he calculated the number originally present. Price[11] himself and other investigators have modified this technique to make it applicable to the study of the action of antiseptics on the cutaneous bacterial flora. Almost all modifications of this technique are designed to demonstrate the effect of an antiseptic on the number of organisms which can be removed from the skin surface. For this purpose, Blank, Coolidge, Rodkey, and Soutter[12] used a six-basin scrub with water alone in all basins except the fifth, in which soap and a scrub brush were used. A surgical scrub procedure was evaluated by interposing a specific scrub between the second and third basins.

A similar technique has been used in the study here reported of the *in (ivo* bactericidal action of the aluminum salts. The subject washed his hands for



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1½ minutes in 2,000 ml. of sterile water in each of two basins; he then soaked his hands for 10 minutes, with rubbing, in 2,000 ml. of a 0.5 per cent* or 1 per cent solution of an aluminum salt; this was followed by 1½ minute washes in two basins with water alone, by a 1½ minute scrub with sterile soap and brush in the sixth basin, and finally by a 1½ minute wash in water alone in the seventh basin. One-tenth and one-half milliliter samples of the liquid from each basin were cultured with Bacto-tryptose agar and the number of colonies counted after in cubation of the plates at 37° C for 26 hours. This is an arbitrary technique. We believe that the scrub in the sixth basin with an alkaline soap and scrub brush hydrates the skin and alters its electrostatic charge so that if many viable organisms remain on the skin after the soak in aluminum solutions, they will be washed off and detected. Alkalinization of the liquids in the third, fourth, and fifth basins before subculturing did not increase the number of viable organisms in the culture plates as compared with plates made without alkalinization.

Table II shows the results of four series of scrubs on the same subject. At least one week was allowed to elapse between scrubs. Each series of scrubs is the same except that the third basin contained either water, aluminum chlorhydroxide, aluminum chloride or aluminum sulfate. It is seen that a 10-minute soak in water alone removes large numbers of viable organisms. The count from the third basin is always low when a solution of aluminum chlorhydroxide is used. If a plate is made from 0.5 ml. of the liquid from the third basin and 0.1 ml. of the liquid from the first basin, the organisms from the first-basin liquid grow well. Therefore the plates made

TABLE II

The number of viable organisms per ml. of basin wash water (2,000 ml. per basin) before and after a 10-minutee soak in 2,000 ml. of water or 0.5 per cent solutions of the various aluminum salts (basin 3). All other basins contain water only, soap and a scrub brush were used in basin 6. (See text for details of this experiment.)

Basin No.	Number of Organisms/ml.			
	Water*	Chlorhydroxide*	Chloride*	Sulfate*
1	2310	3350	6910	3370
2	3010	3300	5580	3620
3	7310	0	640	2670
4	1730	0	40	100
5	1480	0	100	270
6	1540	40	510	530
7	970	30	480	810

*Solution in third basin.

from the third basin do not contain bacteriostatic concentrations of aluminum salts. The absence of viable organisms in basins 4 and 5 might be explained by the trapping of organisms on the skin by the aluminum salt. The presence of so few organisms in basin 6, however, in which soap and a scrub brush were used, indicates that the chlorhydroxide, in the concentration used, does not appear to function by trapping organisms on the skin; it must have killed most of the organisms. The aluminum chloride and aluminum sulfate solutions are less effective germ-

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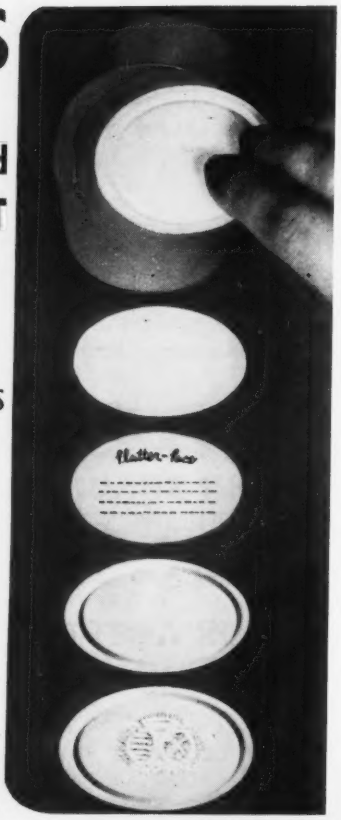

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icides than chlorhydroxide solution, as is indicated by the presence of viable organisms in the third basins and larger numbers of organisms in all basins after the soak in the aluminum solution.

Similar series of scrubs have been run on five other subjects with similar results. No viable organisms have been found in the aluminum chlorhydroxide basin; viable organisms are always found in the chloride and sulfate basins, but seldom as many as are seen in the sulfate basin in Table II. In each case, the chlorhydroxide is a somewhat more effective germicidal agent, though it never produces a sterile cutaneous surface.

3. Bacteriostatic Action on Hydrated Callus Sheets

It is most satisfactory to investigate the bacteriostatic effect of any chemical in the presence of substances with which it comes into contact under actual usage conditions. Therefore, in studying the aluminum salts as antiperspirants and deodorants, their bacteriostatic action is best studied in the presence of keratinized epithelium. Such tissue is available as sheets of callus taken from the sole of the foot. Chemically, this material is the same as or very similar to the *stratum corneum* of the skin of the axillae. If it is kept sufficiently hydrated, it is an adequate culture medium for active multiplication of the bacteria which inhabit the cutaneous surface.

In the experiments reported here, pieces of dried calus were sandpapered to a thickness of 0.30-0.38 mm. and cut in squares 1 cm. x 1 cm. They were placed in 95 per cent ethyl alcohol for 10 minutes, in an attempt to free them from as many bacteria as possible, and then transferred to water held at 37° C. After 30 minutes, they were removed from the water and blotted between sterile filter paper. To each side of the callus, 25μl of a solution of the aluminum salt under investigation was then added. After this, the pieces were hung in weighing bottles (4 cm. x 8 cm.) over a sulfuric acid solution of known concentration. This sulfuric acid solution holds the air in the bottle at a relative humidity which is constant and nearly independent of the temperature. The amount of water which the callus will hold is determined by the relative humidity of the environment.[13] Different organisms have different moisture requirements. Pieces of callus on which the micrococcus was grown were held over 20 per cent sulfuric acid; those on which the diphtheroid and coliform bacillus were grown were held over lower concentrations of acid, usually 13 and 17 per cent respectively. The callus was kept in the weighing bottles for 48 hours at 4° C. in order to establish moisture equilibrium before inoculation.

After equilibrium was established, each piece of callus was inoculated with a loopful of 1:100 dilution of a 24-hour broth culture of the organism. Following incubation at 37° C. for 24 hours, the pieces of callus

were transferred to 100 ml. of sterile water or of 1 per cent sodium phosphate solution and shaken for 20 minutes. The number of organisms in the wash water was then determined by plating in Bacto-tryptose agar. The number of organisms which had been placed on the callus at the time of inoculation was determined by plating 0.1 and 1.0 ml. samples of 100 ml. of water containing a loopful of the inoculum.

It is known that all of the organisms on the callus cannot be removed by the washing procedure. The phosphate solution was used whenever possible in order to increase the efficiency of the washing procedure; it could not be used with the coliform bacillus, since these organisms were killed by the phosphate. Even though recovery of the organisms is not quantitative, one can tell whether growth was active during the incubation period by comparing the number of organisms in the inoculum with the number of organisms recovered. If many more organisms are recovered than were added, growth has been active; if the same number or fewer are recovered, there has been bacteriostasis.

The concentrations of aluminum solutions used 0.25, 0.50, 1.0, 2.0, and 4.0 per cent w/w. The micrococcus seems to grow on all calluses treated with solutions when the concentration of the aluminum salt is 1.0 per cent or below. Bacteriostasis occurred when the calluses were treated with solutions containing 2.0 per cent or higher. No difference was found for the three salts. The plates grown from the wash waters of the calluses which had been treated with the 1.0 per cent and 2.0 per cent solutions are shown in Figure 1.

Similar tests with the diphtheroid and coliform bacillus were erratic. Growth of the diphtheroid appeared to be prevented by 0.5 per cent solutions of aluminum chlorhydroxide. Two per cent solutions of the chlorhydroxide and sulfate seemed to prevent growth of the coliform bacillus, as did somewhat weaker solutions of the chloride.

4. Control of Bacteria Populations in the Axilla

The final test of any bactericidal or bacteriostatic agent is an actual usage test. Klarmann[14] reported that a single application of an aluminum sulfate cream reduced the total bacterial count in the axilla by 95 per cent. It is very difficult to make accurate quantitative determinations of the antibacterial effectivness of the aluminum salts as used in the axilla. One can, however, get a general impression by using the solution on only one axilla and culturing both axillae daily.

Our subjects were asked to use no antiperspirant or deodorant on either axilla for about one week. Cultures were then made from each axilla on several days, using Bacto-tryptose agar and a swab moistened with 1 per cent sodium phosphate solution. When it was observed that cultures from the two axillae were quite similar, the subject was asked to apply 0.5 ml.

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of a 20 per cent solution of an aluminum salt to one axilla when dressing in the morning; nothing was applied to the other axilla. Each axilla was cultured about mid-day or late afternoon or at both times. The female subjects who normally shaved, continued to shave; males were not asked to shave. No consistent hygiene was maintained, other than that the subjects were asked not to wash the axilla on any day between the time the aluminum salt was applied and the time the axillary cultures were made. They were permitted to bathe or wash as they wished, either at night or in the morning, before applying the aluminum salt solution. Twenty per cent solutions of the chlorhydroxide, chloride, and sulfate were used at different times. The chloride and sulfate solutions were buffered with 5 per cent urea.

For each of our ten subjects, a decrease in the bacterial population was seen in the experimental axilla, beginning on the first day the aluminum salt was used and continuing for as long as it was used. The decrease was apparent whether the skin was cultured at noon or at the end of the day. For some subjects, the effect seemed to be cumulative, i.e., the longer the solution was used, the fewer viable organisms were recovered from the experimental axilla. The population of the control axilla was relatively constant. After stopping the use of the aluminum salt, the population of the treated axilla returned to normal in from two to four days. No consistent or large difference was observed for the different aluminum salts. The organisms present on all subjects were gram-positive micrococci. On only one subject did we find a diphtheroid. This organism seemed unaffected by any of the aluminum salts applied.

Figure 2 shows the plates from one subject. It is seen that a few hours after application of a 20 percent aluminum chloride solution to the left axilla (2/6) fewer viable organisms could be recovered from the treated than from the control axilla. This reduction of bacterial population was maintained while the aluminum chloride was being used (2/6 through 2/8). Seventy-two hours after final application of the chloride solution, the bacterial population of the treated axilla was still smaller than that of the control, but there was not much difference between the two (2/11). After 96 hours, the two bacterial populations appeared to be the same (2/12). Similar observations were made on all subjects for each aluminum salt studied.

Summary

Aqueous solutions of aluminum chlorhydroxide and buffered aluminum chloride and sulfate are effective bactericidal and bacteriostatic agents for some organisms.

Weak solutions of aluminum chlorhydroxide are rapidly bactericidal in *vitro* for 99.9 per cent of the organisms in an inoculum of micrococci or diphtheroids and bacteriostatic for the remaining 0.1 per cent. In

concentrations, aluminum chlorhydroxide is more effective than the chloride or sulfate. At 1 per cent concentration, none of the solutions kills coliform bacilli in 14 minutes.

A 0.5 per cent solution of chlorhydroxide is reasonably effective in killing bacteria directly on the cutaneous surface as determined by a modification of the Price technique. It is more effective than the chloride or sulfate.

No major difference is seen in the effectiveness of the three salts in preventing growth of microorganisms on hydrated callus.

The three salts appear to be about equally effective in reducing the cutaneous bacterial population of the axillae under controlled usage tests.

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LANOLIN DERIVATIVES AND MODIFICATIONS

(Continued from page 745)

esters of lanolin fatty acids. It should be noted that products marked water-soluble give transparent dispersions in water, as true solution is not obtained. A Tyndall cone may be observed with these materials in water, indicating colloidal particle size.

These ethylene oxide derivatives are useful as emollients, hair conditioners, non-ionic emulsifiers, wetting agents, foam boosters and stabilizers, solubilizers, dispersants, and plasticizers. They are recommended for a wide variety of cosmetic products, including creams and lotions, hair dressings, shampoos, hair dyes, cold wave solutions, hair rinses, shaving creams; deodorant and antiperspirant sticks, solutions, and creams; colognes, after-shave lotions, rubbing alcohol, and hydrophilic ointments.

1. *Lanogels* (Robinson, Wagner). A series of polyoxyethylene lanolins of varying ethylene oxide polymer chain length. These derivatives form golden amber, aqueous solutions with viscosities

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ranging from thin, free-flowing liquids to thick, viscous pastes depending on concentration.[71] Type No. 21 is a 50 per cent active aqueous gel which forms turbid dispersions which become clear on dilution with ethanol or isopropanol. Type No. 31 is a 50 per cent active aqueous gel which gives clear aqueous solutions without the addition of alcohol. Type No. 41 is designed for liquid and gel preparations where clarity is desired at temperatures from O°C. up, at concentrations from 1 to 10 per cent.

2. *Etholan* (Robinson, Wagner). A soft, waxy polyoxyethylene ether of lanolin (100 per cent active) designed for use in aerosol hair sprays as a hair conditioner and plasticizer for the film-former. It is soluble in 95-100 per cent ethyl alcohol and in water.[72]

3. *Ethoxylan* (N. I. Malmstrom). A polyoxyethylene lanolin prepared from specially selected lanolin, soluble in water and alcohol. It is odorless, with a consistency varying from a golden-colored solid (anhydrous, Ethoxylan 100), to a heavy transparent golden-colored aqueous solution (50 per cent, Ethoxylan 50). Both types are recommended as non-ionic emulsifiers which impart emollience to O/W and W/O systems, and for use in shampoos, antiperspirants, hair preparations, shaving preparations, and pharmaceutical ointments.[73]

4. *Atlas G-1790* (Atlas Powder Co.). A polyoxyethylene lanolin soluble in water and insoluble in alcohol,[74] with about 55 per cent by weight of polyoxyethylene content.[104] With an approximate molecular weight of 700 to 800 for lanolin, this would be equivalent to about 20 to 23 moles of ethylene oxide to one "mole" of lanolin,

5. *Atlas G-1425, G-1441, G-1471* (Atlas Powder Co.), A series of hydrophilic polyoxyethylene sorbitol lanolins prepared by a patented process,[75] described as alcoholysis products of lanolin and polyoxyethylene ethers of sorbitol. Griffin stated in the patent that "variation in the emulsifying properties of the lanolin alcoholysis products may be obtained by variation of the relative proportions of lanolin, polyoxyethylene radical, and polyhydric alcohol and of the kind of polyhydric alcohol." Another patent[76] describes a polyoxyethylene sorbitol lanolin derivative, soluble in mineral oil. Griffin stated that this effect is accomplished by "alcoholyzing anhydrous lanolin with a polyoxyethylene ether of a hexitol (such as sorbitol), and esterifying the resulting alcoholysis mixture with sufficient oleic acid to react with the available hydroxyl groups."

Atlas G-1441 is stated to be composed of 65.1 per cent polyoxyethylene, 6.7 per cent sorbitol and 28.2 per cent lanolin (by weight).[104]

These products are recommended as emulsifiers in O/W systems which impart the emollience of lanolin as a more hydrophilic material. They are suggested for use in creams, lotions, hair preparations, liquid soaps, shampoos, and rubbing alcohol.[77,78,79]

6. *Solan* (Croda). A polyoxyethylene lanolin in the

form of a transparent golden-colored gel containing 50 per cent active material, completely soluble in water.[47,49]

7. *Polychol* (Croda). A polyoxyethylene ether derivative of lanolin alcohols, supplied as a 50 per cent viscous solution in water.[47,49,79] It is described in a British Patent[80] as a product obtained by the action of ethylene oxide on Hartolan. The melted lanolin alcohols are agitated in an atmosphere of ethylene oxide vapor at 130-170 C., using sodium methoxide as a catalyst. A derivative having over 40 moles of ethylene oxide per "molecule" of lanolin alcohol gave a transparent solution in water.

Lower[47] stated that this material represents a new departure in wetting, dispersing, emulsifying, penetrating, and spreading agents. "The hydrocarbon portion of its molecules is due largely to the cholesterols, sterols, and triterpene-like alcohols condensed with the ethylene oxide, as distinct from straight chains of the higher aliphatic alcohol polyglycol ethers previously available."

8. *Solulan 98* (American Cholesterol Products). This product is described as a polyoxyethylene derivative of fatty acids and partially acetylated lanolin alcohols.[81] The product is a 100 per cent active liquid material. It is clearly soluble in water, ethanol, isopropanol and many other materials commonly used in cosmetics. The 40 per cent aqueous solution of Solulan 98 forms a stiff, transparent gel of interesting properties. The product has an unusual ability to solubilize lanolin in water. It is a solubilizer for perfume oils and a co-solvent and plasticizer for aerosol sprays. It is recommended for use in cosmetic products as a conditioner and emollient to impart a soft, non-tacky feel to the skin and hair.

J. Lanolin Absorption Bases

These products are essentially mixtures of petrolatum and hydrocarbon waxes containing 2 to 55 per cent of lanolin alcohols or selected fractions of these alcohols. They are used as self-emulsifying emollients in W/O emulsions, as well as the major vehicle for pharmaceutical ointments.[47,82,83,84]. The word "absorption" refers to the water-absorbing or emulsifying properties of these bases and not necessarily to their action when applied to the skin. In some instances, other effective W/O emulsifiers, such as Arlacel 83 or polyhydric alcohol oleate esters, are added to improve the ease and capacity of water absorption.

Absorption bases are available which are not made with lanolin-derived emulsifiers. One product contains Arlacel 83 in a petrolatum-wax base[85,86,87] and is covered by patent.[88] Other emulsifier systems have been described for hydrophilic absorption bases.[89,90]

Not all the lanolin alcohol components are equally efficient as W/O emulsifiers. Tiedt and Truter[24] studied the behavior of lanolin and its constituents in W/O emulsions. They indicated that the esters of lanolin are incapable of forming emulsions by them-

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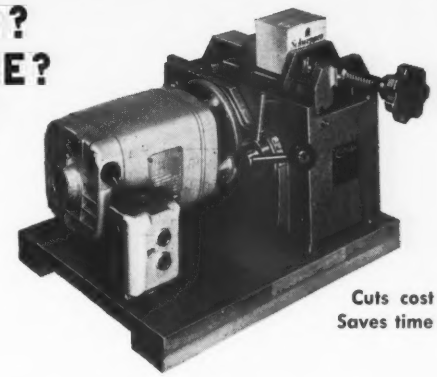

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selves, and found that the most effective emulsifying agents are members of the aliphatic dihydric alcohol series 1,2-diols. They also suggested that the "isocholesterol" (now known to be the triterpenoid alcohols lanosterol and agnosterol) should be removed from any preparation for which good emulsifying properties are desired. Certain mixtures of lanolin alcohol and ester fractions were found to be superior to any single fraction and to lanolin itself.

Each of the representative lanolin absorption bases are highly specialized formulations constaining a variety of many differing combinations and concentrations of free cholesterol, sterols, monohydric and dihydric alcohols, and lanolin esters. They are recommended in W/O emollient creams and lotions, W/O hair dressings, deodorants, protective creams, lipstick, make-up, and serve as bases for pharmaceutical ointments.

1. *Alcolan* (Robinson, Wagner). This lanolin absorption base contains those lanolin alcohol and ester fractions with maximum emulsifying power, which are selectively separated from lanolin by chromatographic adsorption. These components are dispersed in soft, microcrystalline waxes. Regular Alcolan contains 1.5-2 per cent cholesterol, 10-11 per cent lanolin fractions, and the remainder mineral hydrocarbons. Alcolan 36-W contains 6-8 per cent cholesterol, 53-55 per cent lanolin fractions, and the remainder mineral hydrocarbons. Alcolan 40 contains 6-7 per cent cholesterol, 50 per cent lanolin esters, the remainder mineral hydrocarbons, and is specifically recommended for W/O hair dressing lotions.[91]

2. *Amerchol Absorption Bases* (American Cholesterol Products). *Amerchol CAB* is a semi-solid, multi-sterol non-ionic, surface-active emulsifier and emollient.[57] The active factors are cholesterol, related sterols, and complex higher alcohols, processed in hydrocarbons to produce a melting point of about 45 C. Among the sterols present are cholesterol, agnosterol, lanosterol, 7-dehydrocholesterol, dihydrocholesterol, and cerebrosterol. *Amerchol H-9* (Sterolatum) is a semi-solid, surface-active, multi-sterol absorption base, containing the same active components as in type CAB, blended in hydrocarbons to raise the melting point to about 60 C. *Amerchol C* is a semi-solid absorption base containing cholesterol esters as well as free sterols. *Amerchol L-101* may be used as a concentrate to prepare absorption bases by the addition of mineral oil, wax, and lanolin.

3. *Nimco Cholesterol Bases* (N.I. Malmstrom). *Liquid Nimlesterol* is an absorption base containing free cholesterol and its isomers with a minimum total sterol content of 15 per cent. It is completely soluble in oil and dispersible in water. *Base N 712* is an unctuous type with a total sterol content of 36 per cent minimum and a free cholesterol content of 10 per cent, with a melting point of 47-50 C. *Base H* is a firm, non-tacky product with a total sterol content of 13.5 per cent minimum, with a melting point of 48-

52°C. The free cholesterol and cholesterol esters are balanced to produce stable W/O emulsions. *Base P* is a soft, unctuous product containing 19 per cent total sterols, with a melting point of 35-40 °C. It is recommended as a stabilizer for triethanolamine stearate lotions and creams.[92]

4. *Protegin X* (Goldschmidt). A semi-solid absorption base[93] containing cholesterols and cholesterol esters, with a melting point of about 40°C.

5. *Iso-Lan* (Goldschmidt). A semi-liquid, non-tacky, absorption base containing free lanolin in addition to the high cholesterol content.

6. *Isocreme* (Croda). A semi-solid lanolin absorption base containing 5 per cent cholesterol.[49,94]

7. *Cremba* (Croda). A solid-absorption base[49] containing 2.5 per cent cholesterol and a melting point of about 40°C.

8. *Hydrophil* (Bopf-Whittam). A lanolin absorption base.

9. *Aquaphor* (Duke Laboratories). A lanolin absorption base containing 6 per cent lanolin alcohols in a petrolatum base.[95]

10. *Eucerin* (Duke Laboratories). A W/O emulsion of 50 per cent water in 50 per cent Aquaphor.[95]

11. *Sorbolex* (Van Dyk). Type AA is a soft solid absorption base containing lanolin isolates, with a melting point of about 46-52 °C. Type 100-C contains cholesterol and related sterols in a hydrocarbon base, with a melting range of 45-55 °C. Type 301 contains a mixture of higher fatty alcohols and esters in a hydrocarbon base, with a melting range of 47-52 C.[96]

12. *Falba* (Pfaltz and Bauer). An absorption base derived from lanolin[97] with a melting point of about 41 °C.

13. *Fanning Absorption Base* (Fanning Chemical).

14. *Morningstar Absorption Base* (Morningstar, Nicol). The O/W types include Bases 326 and 490, both of which are stated to be "compounds of fatty acid esters, animal and mineral fats." The W/O types include the Standard Base and Base 256, both of which are a compound of higher fatty alcohols, lanolin, and petrolatum; Base 2691 is a compound of animal fats, fatty acid esters, and petrolatum; Base 3276 is a solution of lanolin alcohols in petrolatum.[98]

15. *USP Hydrophilic Petrolatum* (15th Edition). This absorption base consists of 3 per cent cholesterol, 3 per cent stearyl alcohol, 8 per cent beeswax, and 86 per cent petrolatum.

16. *British Pharmacopoeia Absorption Base* (6th Addendum). This formula contains 6 per cent lanolin alcohols, 24 per cent paraffin, 10 per cent petrolatum, and 60 per cent mineral oil (all parts by weight.)

K. Special Lanolin

1. *Hychol* (Robinson, Wagner). This product is a USP lanolin with special chemical and physical properties.[99] It contains 18-20 per cent total cholesterol (free and combined) as compared to 13-15 per cent for standard lanolins. The melting point of this product

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is 41-42°C. as compared to 36-39°C. for regular lanolin. This comparatively high melting range is due to the high cholesterol ester content, which imparts a stiffer more waxy body. It is stated that the emulsifying power is about 25 per cent greater than that of regular lanolin, and forms emulsions that have a heavier consistency.[99] The product is claimed to have surface-tension reducing properties that facilitate miscibility of fat/oil/wax blends, and aids in achieving complete dispersion of pigments in such compounds. It is therefore recommended for use in lipsticks, creme rouge, eyebrow pencils, mascaras, and nail polish. In lipsticks it is recommended as an effective binding agent to obtain a homogeneous mass, to inhibit sweating, and to make the stick more plastic and emollient.

2. *Nimco Super Lanolin* (N. I. Malmstrom). A lanolin of normal consistency containing 10 per cent free cholesterol, 10 per cent cholesterol esters, a minimum of 50 per cent total sterols, with a melting point of 36-42°C. It is recommended as an efficient W/O emulsifier with all the physical properties of lanolin plus the added advantage of a high free cholesterol content. It is recommended for use in creams and lotions as an emollient, skin moisturizer, and penetrant; in shampoos and hair dressings as an emollient and conditioner; in lipsticks as an emollient and to inhibit bloom formation; and in deodorant and antiperspirant creams as an emulsion stabilizer.[92]

L. Label Nomenclature

The term modification is used to denote a *physical* form of a substance which differs to some extent from the original form, such as the liquid and waxy lanolins obtained by solvent crystallization or distillation. The term derivative is used to express the relation between certain known substances and the compounds formed from them by *chemical* processes, such as ethoxylation, acetylation, and trans-esterification.

The diversity of lanolin derivatives and modifications presents a question in regard to the correct labelling of cosmetics containing these materials. Chemically speaking, it would not be valid to use the term lanolin for these modifications and derivatives. In such cases, the word lanolin should be prefaced with the term "modified," "hydrophilic," "hydrophobic," "processed lanolin," "chemically reacted," or simply called "lanolin derivative." In a few specific cases, the term lanolin has been approved for the liquid lanolins and certain modified ester derivatives. The former involve types which contain all the components of regular lanolin but differ in the relative proportions of these components (such as Lantrol, Lanogene, Fluilan); the latter involve types where certain derivatives contain significant amounts of USP unreacted lanolin as one component of the product (such as Modulan, Isopropylan, and Lanosol). Modulan contains about 61 per cent unreacted lanolin, since there are about 35 per cent hydroxy

esters and up to 4 per cent free alcohols in lanolin which can be acetylated. Isopropylan No. 33 and No. 50 contain 33 per cent and 50 per cent, respectively, unreacted lanolin, respectively; and Lanosol contains about 60 per cent unreacted lanolin. References have appeared concerning the question of labelling of products containing lanolin modifications and derivatives.[100]

American Cholesterol Products, Amerchol Park, Edison, New Jersey.

Armour Laboratories, 4 Coates Street, East Paterson, New Jersey.

Atlas Powder Co., Wilmington 99, Delaware.

Bopf-Whittam Corp., 1135 Elizabeth Avenue., W., Linden, New Jersey.

Croda, 15 East 26th Street, New York 10, New York.

Croda, Ltd., Cowick Hall, Snaith, Goole, Yorkshire, England.

Duke Laboratories, Duke Place, South Norwalk, Conn.

Esperis Co., Milan, Italy.

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N. I. Malmstrom Co., 147 Lombardy Street, Brooklyn 22, New York.

Malmstrom Chem. Corp., 259 Parkhurst Street, Newark 5, New Jersey.

Morningstar, Nicol Inc., 639 West 51st Street, New York 19, N. Y.

M. W. Parsons-Plymouth, 59 Beekman Street, New York 38, N. Y.

Pfaltz and Bauer, 350-5th Avenue, New York 1, N. Y.

Robinson, Wagner Co., 110 East 42nd Street, New York 17, N. Y.

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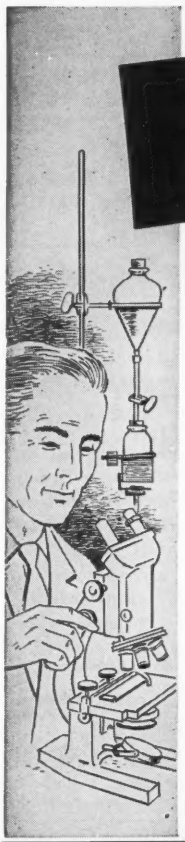

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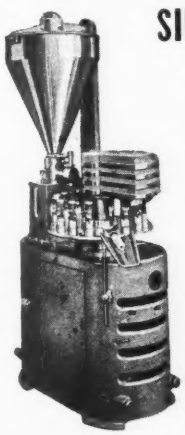

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T.G.A. CONVENTION

(Continued from page 742)

a graduate of the Amos Tuck School.

The CIBS Award was made at the final luncheon session of the convention by George Kaempkes, of Pacquin, Inc., president of the CIBS, to Dr. Leo Levi, James L. Thomson, Dr. James C. Evans, Dr. Harold Bernstein and S. A. Forman for their paper "The physico-chemical characterization of essential oil constituents and their derivatives by modern instrumentation techniques". Dr. Levi accepted the presentation for his co-workers.

Pierre Harang in his President's report to the convention posed some very interesting questions to the members of the industry. Perhaps the most important question raised was whether the standing or stature of the toilet goods industry compared favorably with that of other industries and whether the TGA should take some action along public relations lines to improve that standing.

Mr. Harang also indicated his own doubt that the industry was holding its own in the ever-growing gift business. He also discussed briefly the advertising of the industry and raised the question of whether part of it was not responsible for increased activity by state and federal regulatory bodies.

S. L. Mayham, Executive Vice-President of The TGA took sharply to task those companies in the industry who have not taken any part in the activi-

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ties of The Toilet Goods Association or supported its work over the years.

He outlined briefly the scientific work of the Association in establishing standards for raw materials and especially standards for newer raw materials for which no previous specification existed, and he indicated that the TGA, as a policy, would take no part in anything which might lead to "grade labeling" of the products of the industry.

He outlined many activities of the Association and indicated that all these things had been accomplished without any special assessment to the membership despite the fact that non-member companies, who did not lend their assistance or support, were benefitting equally with member companies.

After a luncheon talk by Otis L. Wiese of "McCall's" on "The Changing Personality of America", the theme of the Tuesday afternoon session was "Personality and Packaging" under the chairmanship of John A. Cawley. Papers were given by Florence Goldin of Grey Advertising Agency on "The Changing Personality of Women as Cosmetic Customers", by Lloyd Stouffer of "Modern Packaging" on "Trends in Packaging", by Donald Deskey of Donald Deskey Associates on "Product Personality in Your Package Design", and by Janet Myers of Bourjois, Inc. on "Packages and Women".

Wednesday morning sessions were based upon "The Changing Personality of Toiletries Distribution" under the chairmanship of Jean Despres of Coty, Inc. Papers presented were "The Drug Wholesaler", by Dr. Herman Nolen of McKesson & Robbins; "The Drug Store", by Ade Schumacher, former President of Liggett Drug Co.; "The Department Store", by John W. Straus of R. H. Macy Company; "The Super Market", by Joseph Handleman of Handleman Drug Company; "The Variety Store", by Philip W. Schindel of Variety Stores Association.

The theme of the Wednesday afternoon session was "How Promotion Builds Product Personality" under the chairmanship of Donald Bryant of Warner-Lambert Pharmaceutical Co. The papers were "Advertising's Role in Making Sales" by Raymond K. Maneval; "Building Product Personality Through Mass Consumer Advertising" by Donald S. Frost of Bristol-Myers Products Co.; "Building Personality Through Limited Advertising" by Norman Mack of Peck Advertising Agency.

The Scientific Section met on Thursday, with Orville Davenport of Avon Products, Inc. as Chairman. "Interference of Nonionic Emulsifiers with Preservatives V. Chromatographic and Chemical Investigation" was presented by Constance S. Hall and Maison G. deNavarre of Cosmetic Laboratories, Inc.; Noel Schwartz and Dean Foster of U. S. Testing Laboratory presented "The Measurement of Consumer Reaction to Fragrances"; "The Antibacterial Activity of Aluminum Salts" was given by Irvin H. Blank and Ruth Dawes of the Harvard Medical School and Marjorie Moreland of Summit Diagnostic Laboratories; "Ethanolamines in Topical Preparations" was given by J. H. Draize et. al. of the F. D. A. In the afternoon session, Bernard E. Conley of the A. M. A. presented "Pitfalls in Evaluating the Safety of Cosmetics"; A. Pozefsky and M. E. Grenoble of the General Electric Company presented a paper on "The Analytical Chemistry of Silicones in Cosmetics"; Herbert J. Spoor discussed "Practical Measurements of Epidermal Emolliency and Emollient Penetration."

A.P.M.A. MEETING

(Continued from page 747)

ship over direct mail material, said Mr. Larrick. "We are definitely concerned, however, when a firm undertakes to promote a new drug with disregard for the indications and cautions set forth in the new drug application."

From time to time, said Mr. Larrick, The FDA discovers a drug on the market which it considers a new drug, but for which a new drug application has not been filed and processed. If the agency believes its views can be sustained in court, he said, then the FDA is obligated to take proper legal action. "This," he added, "is not a course we relish taking."

"When we have run into this situation," said Mr. Larrick, "we have advised the firm of our views concerning the new drug status of their product, asked that it be recalled from the market and not further promoted until they have filed a new drug application, and it has been made effective." Admitting that this represents "a major and serious interruption to a company's business," he suggested that drug executives can easily help prevent this from occurring in their own firms by seeing to it that the FDA new drug branch is consulted before marketing a new product.

President-elect Francis C. Brown, president of Schering Corporation, took over as president of the association. William B. Graham, Baxter Laboratories, Morton Grove, Ill., was chosen president-elect. The three regional Vice-presidents elected are: Eastern, Allan J. Greene, Chas. Pfizer & Co.; Central, Nelson M. Gampfer, The Wm. S. Merrell Company; and Western, Dr. Paul W. Spikard, Rexall Drug Compnay. Elected to the board of directors are: Dr. Cutter; Lee Gibson; Lakeside Laboratories; William C. Connor, Alcon Laboratories; and Carl K. Raiser, Smith, Kline & French Laboratories. S. B.Penick, Jr., president of S. B.Pencik & company, was reelected treasurer.

Concerning the cancer chemotherapy program of the government, the association had the following to say: "Widespread public concern over the ravages of cancer has led to the establishment of a national program on cancer chemotherapy supported by government and private agencies, and the government has

recently appropriated large sums of money for anti-cancer research, including the testing of substances developed by the pharmaceutical industry and other research laboratories."

The association stated that the pharmaceutical manufacturing industry understands that cancer research presents unique problems and wants to participate in any effort directed toward their solution. However, it was stated, that money alone, no matter how much, "cannot solve research problems."

"The pharmaceutical industry," it was noted, "has the experience and ability to assist in the rational development of a long-range effort to provide the essential facilities, manpower and know-how that must be developed without impairment of other medical research important to the public health."

Therefore, the association said, it is encouraging its member firms "to assist in the development of this special program and to participate in this fight against cancer on such terms as they may individually arrange with the agencies involved."

The association found the Boggs bill for control of barbiturates and amphetamines to be "in its present form, subject to sound objections."

TUBE DESIGN

(Continued from page 763)

welcomed the chance to work closely with packaging engineers in customer companies.

What, specifically, should the packager look for when trying to gauge a supplier's capabilities? The following checklist can be helpful:

1. Does the supplier have an active research and development department: The packager should have evidence that the supplier is constantly looking for new tube design improvements.
2. Does the supplier have a full range of metal room facilities? Very few tube manufacturers, for example, have their own foundries to turn out aluminum slugs from which many tube products are produced. Possession of a foundry which processess aluminum ingots into slugs marks a supplier as tops in production capabilities. It means the supplier has an assured inventory of the aluminum slugs. It also means the packager benefits because of the supplier's more intimate knowledge of every aspect of tube production. Sun Tube has found all these points to be true in its foundry which last year processed more than 6,000,000 pounds of aluminum.
3. What kind of quality control program does the supplier have? At Sun Tube, for example, we have found that by using all the variations of inspections we can better assure the quality of the packager's tubes. These include periodic, spot, in production, and end

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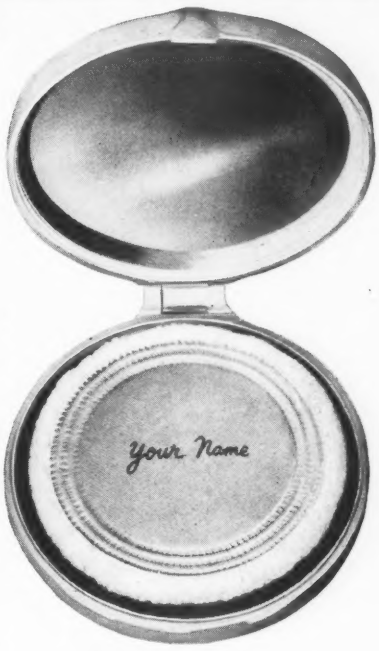

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of line inspections among others. The degree to which the production line is automated is also a reliable guide to the effectiveness of quality control. We have found that since we have concentrated on automating our lines, quality control had become more effective than ever before.

4. What is the reserve capacity of the supplier's plant? The supplier's ability to produce a a test run of a new design quickly may depend on whether or not he can handle a sudden upsurge in production activity. At Sun Tube, unit line production facilities permit jobs to be inserted on the various lines without dealy. This adds greatly to the supplier's over-all capabilities.

Thus, tube design is not limited to design considerations alone, but embraces a wide range of needs. The responsible supplier and packager who assess these needs carefully can lay the groundowork for a fruitful interchange of ideas. The result of such mutual effort can only be the best possible tube design.

PATENT THOUGHTS AND TRENDS

(*Continued from page 775*)

naphthalene, paradichlorobenzene, hexachloroethane, 4, 4-dimethylbenzophenone, o-diphenyl benzene and camphor.

The compositions may comprise the 1, 3-dichloro-5, 5-dimethylhydantoin and decomposition retardant in a wide range of proportions from 5 per cent to 95 per cent by weight of the one, to 95 per cent to 5 per cent of the other. A plurality of the decomposition retardants may be mixed with the hydantoin.

Dimethylnonanals from Terpenes

A process for making 11-carbon aldehydes from allo-ocimene and myrcene is the subject of U. S. Patent 2,790,006 issued on an invention of Bordenca, and assigned to Newport Industries. Allo-ocimene is a product of the pyrolysis of alphapinene; myrcene is a product of the pyrolysis of beta-pinene. The formulas of myrcene and allo-ocimene are represented as follows:

$(CH_3)_2{-}C = CH{-}CH_2{-}CH_2{-}C(=CH_2){-}CH = CH_2$

Myrcene

$(CH_3)_2{-}C = CH{-}CH = CH{-}C(CH_3) = CH{-}CH_3$

Allo-ocimene

The Bordenca process involves subjecting the starting materials to hydroformylation, with the use of a mixture of carbon monoxide and hydrogen, commonly referred to as "synthesis gas" in order to form the corresponding C-11 aldehydes.

An example, starting with allo-ocimene, taken from the patent, is given below:

410 parts by weight of allo-ocimene were charged into a pressure vessel having a capacity four times the volume of the charged material, along with 40 parts by weight of cobalt carbonyl crystals. A 1:1 volume mixture of carbon monoxide and hydrogen was charged in to a pressure of 4000 p. s. i. and the vessel heated with shaking to 135 °C. A maximum pressure of 550 0p. s. i. was attained at that temperature, followed by pressure reduction in the course of 2 hours to 3000 p. s. i. Distillation of the reaction mass gave a 70 per cent yield of 4,8-dimethylnonanal based upon the allo-ocimene used as starting material. A fraction analyzing 92 per cent aldehyde boiled at 94–5 ° C./10 mm. Hg and had an index of refraction, n_D^{20}, of 1.4340 and a specific gravity, d_4^{20} of 0.834. The 2,4-dinitrophenylhydrazone melted at 69-72 °C.

In the hydroformylation step, the composition of the mixture of carbon monoxide and hydrogen may be varied considerably, but the 1:1 molar ratio commonly used in carrying out the Oxo reaction has been found most satisfactory. The temperature is preferably maintained at less than 200 °C., with from 125 to 150 ° C. as the optimum range. Other temperature and pressure conditions and other catalysts than those specifically mentioned in the example can be used provided they are favorable to the formation of the corresponding aldehyde with reasonably good yield.

Note:

The following comment, although impliedly made numerous times, perhaps, should have been expressly made in these columns a long time ago. Do not assume that just because a patent has been obtained that the applicant had an easy time and did not have to "convince" the Patent Examiners. For example, the average period of pendency of the patents discussed above was about four years. It seems reasonable to suppose that the successful applicants have had to prosecute their respective cases vigorously in order to succeed.

RECENT PATENTS

***2,789,079*—Crookes Labs.—Orally Administrable Dry Therapeutic Compositions**

***2,789,080*—H. M. Christensen (Denmark)Insulin-Albumin Compositions.**

***2,789,111*—Hoffmann-La Roche—Prepn. of Octahydroisoquinoline Derivatives.**

***2,789,112-3*—Ciba—N-Oxides of Deserpidates and Reserpic Acid Compounds.**

***2,789,117*—Merck—Dihydroxy-Pregnadiene 21-Phosphates and 9-Fluoro Derivatives Thereof.**

***2,789,118*—Am. Cyanamid—16-Alpha Oxy-$\Delta^{1,4}$-Prognadienes.**

***2,789,127*—Hoffman-La Roche—Prepn. of 2, 6-Dimethyl-8-(2, 6, 6-Trimethyl-1-Cyclohexenyl)-2, 4, 6-Octatriene-1-Al.**

***2,789,130*—Hoffmann-La Roche—Intermediates and Preparation of 6-Methyl-9-Cyclohexylidene-5-Nonen-2-One.**

2,789,131—Ortho Pharmaceutical Corp.—Vitamin A Synthesis.
2,789,138—Upjohn—d - N - Methyl-N-Benzyl-β-Phenylisopropylamine.
2,789,938—Merck—Producing a Diuretic Effect with p-Carboxybenzenesulfonamide.
2,789,939—Chas. Pfizer—Production of Glutamic Acid by Cephalosporium.
2,789,940—Am. Cyanamid—11 Beta Hydroxylation of Steroids By Botrytis Cinerea.
2,789,941—Comm. Solvents—Bacitracin Process.
2,789,977—Irwin, Neisler & Co.—Veratrum Alkaloids.
2,789,978—J. Rath—Dimethylaminopropyl-Dipyridothiazane.
2,789,979—G. D. Searle—Basically Substituted N-Alkyl-2-Amino-4 - Hydroxy -5-Pyrimidene Carboxamides.
2,789,984—Upjohn—5-Benzyloxy-3-Indole Alkylamines.
2,789,987—Am. Cyanamid—Racemization of d-α-Hydroxy-β, β-Dimethyl γ-Butrolactone
2,789,989—Glidden—21-Halo Steroids Preparation.
2,789,990—Am. Cyanamid—Preparing Dithiol Monocarboxylic Acids.
2,789,991—Am. Cyanamid—Substituted Disulfones.
2,789,997—M. Sahyun—Glycine Ester Salts of Cyclohexyl-Sulfamic Acid.
2,789,998—Sterling Drug—D-Homo-17α(20)-Pregnenes.
2,790,746—Souza, Seabra & Cia (Brazil)—Anti-Rheumatic Suppository.
2,790,748—Schering—X-ray Contrast Agent.
2,790,792—Bristol Labs.—Streptomycins Reduction.
2,790,799—Syntex (Mexico)—Cyclopentanophenanthrenes.
2,790,800, -12, -16, -17—Ciba—Organic Mercury Compounds.
2,790,802—Am. Cyanamid—Substituted Tetrahydropteridines.
2,790,807—Schenley—Carbethoxy Derivatives of 3, 5-Pyrazolidinediones.
2,790,829—Akt. Astra (Sweden)—Amyl-Glycine-Anilides.
2,791,530—Abbott Labs.—Stabilized Furnagillin Compositions.
2,791,531—Eli Lilly—Erythromycin Thiocyanate.
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